KPPA Audit Committee
November 27, 2023 at 10:00 a.m. Eastern Time
Live Video Conference/Facebook Live

AGENDA

1.	**Call to Order**	Bill O'Mara
2.	**Opening Video Teleconference Statement**	Legal Representative
3.	**Roll Call**	Sherry Rankin
4.	**Public Comment**	Sherry Rankin
5.	**Approval of August 24, 2023 KPPA Audit Committee Minutes***	Bill O'Mara
6.	**External Audit Updates**	Adam Gordon
	a. **DRAFT Fiscal Year Ended June 30, 2023 External Audit, includes financial section of the annual report and GASB 67 and 74***	
	b. Discussion on Management Letter Comments	
	c. Auditor Communications with those Charged with Governance	
7.	**DRAFT Management Response to Fiscal Year 2022 GFOA ACFR Letter***	Connie Davis
8.	**Infrastructure and Application Security Assessment**	Dominique McKinley
	a. Results of Infrastructure and Application Security Assessment	
	b. **Request for Infrastructure and Application Security Assessment***	
9.	**KPPA Audit Committee Administrative Updates**	
	a. Information Disclosure Incidents	Carrie Bass
	b. Anonymous Tips	Stephanie Hold
	c. Internal Audit Budget as of 9/30/2023	Matt Daugherty
	d. Status of Current Internal Audit Projects	Kristen Coffey
	e. **Issued Reports and/or Memorandums***	
	i. Review of Expenses Allocation	Kristen Coffey
	ii. Review of Investment Manager Fees	Madeline Evans
	iii. Quality Assurance and Improvement Plan: Self-Assessment	Melinda Wofford
10.	**Association of Public Pension Fund Auditors Fall 2026 Conference**	Madeline Evans
11.	**NCPERS - Best Governance Practices for Public Retirement System**	Will Prince
12.	**Adjourn**	Bill O'Mara

***Action may be taken by the KPPA Audit Committee**

MINUTES OF MEETING
KENTUCKY PUBLIC PENSIONS AUTHORITY
AUDIT COMMITTEE
AUGUST 24, 2023, 10:00 A.M., E.T.
VIA LIVE VIDEO TELECONFERENCE

At the August 24, 2023 Meeting of the Audit Committee of the Kentucky Public Pensions Authority, the following Committee members were present: William O'Mara (Chair), Betty Pendergrass, Lynn Hampton, and William Summers, V. Staff members present were CERS CEO Ed Owens, III, KRS CEO John Chilton, David Eager, Rebecca Adkins, Erin Surratt, Michael Board, Victoria Hale, Carrie Bass, Stephanie Hold, Steve Willer, Michael Lamb, Connie Davis, Matthew Daugherty, William Prince, Madeline Evans, Melinda Wofford, Ashley Gabbard, Glenna Frasher and Katie Park. Others present included Adam Gordon and Linda Hinton with the Auditor of Public Accounts.

Mr. O'Mara called the meeting to order.

Mr. Board read the Opening Statement.

Ms. Park called roll.

There being no ***Public Comment*** received, Mr. O'Mara introduced the agenda item ***Approval of Minutes – July 26, 2023*** *(Video 00:05:54 to 00:06:42).* Ms. Hampton made a motion to approve the minutes as presented. The motion was seconded by Ms. Pendergrass and passed unanimously.

Mr. O'Mara introduced the agenda item ***Overview of Fiscal Year 2023 External Audit*** *(Video 00:06:43 to 00:14:40).* Mr. Adam Gordon with the Auditor of Public Accounts Office gave an Audit Update presentation. He reviewed the purpose, progress, outstanding items, and tentative timeline of the Audit with the KPPA Audit Committee. KRS 61.645(12)(b) requires the Auditor of Public Accounts to audit KPPA at least once every five years. The last audit was for fiscal year ending June 30, 2018, said Mr. Gordon.

Mr. O'Mara introduced the agenda item ***Financial Statements for Fiscal Year Ended June 30, 2023 (unaudited) including Contribution Report and Administrative Expenses*** *(Video 00:14:41 to 00:39:08).* Mr. Lamb, Chief Financial Officer, reviewed the Combining Statement of Fiduciary Net Position of the Pension Funds as of June 30, 2023. Next, Mr. Lamb briefly reviewed the Combining Statement of Changes in Fiduciary Net Position of the Pension Funds for the twelve-month period ending June 30, 2023, Combining Statement of Fiduciary Net Position of Insurance Funds as of June 30, 2023, and the Combining Statement of Changes in Fiduciary Net Position of Insurance Funds for the twelve-month period ending June 30, 2023, with the KPPA Audit Committee. Mr. Lamb went on to present the CERS and KRS Pension and Insurance Funds Contribution Reports for the twelve-month period ending June 30, 2023. He briefly presented the FY 2022-2023 KPPA Administrative Budget and Budget-to-Actual Analysis for the fiscal year ending June 30, 2023. Plan-Specific Expenses and Separation Expenses were also highlighted by Mr. Lamb. Next, he reviewed the JP Morgan Chase Earnings and Fees and Hard Interest Earned for the fiscal year ending June 30, 2023.

Mr. O'Mara introduced the agenda item ***KPPA Audit Committee Administrative Updates*** *(Video 00:39:09 to 01:19:50).* Mr. Matthew Daugherty presented the Audit items on behalf of Ms. Coffey. Mr. Daugherty presented the Internal Audit Budget as of June 30, 2023. Ms. Pendergrass stated that the retirement cost was increasing more than the salary cost. She asked if the contribution rate in the retirement line was still too high or if it had been adjusted. Mr. Daugherty stated that he would consult with Ms. Coffey and provide an answer at a future meeting. Ms. Pendergrass made a motion to approve the Internal Audit Budget for the Upcoming Fiscal Year pending a modification to the employee retirement line item. Ms. Hampton seconded the motion and the motion passed unanimously.

Next, Mr. Daugherty presented Audit Committee Agenda Items. To reduce the amount of duplicate information being presented at Board and Committee meetings, the KPPA Division of Internal Audit proposed a schedule for various items to be presented. Ms. Pendergrass suggested that Management Letter Comments be included as an informational agenda item at the CERS and KRS Boards of Trustees meetings. However, Ms. Hampton, Mr. Summers, and Mr. O'Mara opposed the suggestion. Ms. Hampton made a motion to approve the Audit Committee Agenda Items as presented. The motion was seconded by Mr. Summers and passed unanimously.

Mr. O'Mara requested that agenda item Charter for the Division of Internal Audit Administration be discussed next. Mr. Daugherty reviewed a redlined version of the Charter for the Division of Internal Audit Administration. The KPPA Audit Committee recommended that the following amendments be made to the Charter: (1) Delete VII. Internal Control System, Components of COSO; and (2) amend the language in item three of VIII. Scope of Responsibilities, Internal Controls and Compliance to read, "Test and evaluate…" Mr. O'Mara added that a decision regarding the evaluation and reporting of the Chief Auditor would be deferred to the KPPA. Ms. Pendergrass made a motion to approve the Charter for the Division of Internal Audit Administration as modified. Ms. Hampton seconded the motion and the motion passed unanimously.

****Mr. Summers V exited the meeting****

Ms. Carrie Bass presented Potential Information Disclosures/Breaches affecting the KPPA for the fourth quarter of FY23. She reported that there were four (4) potential disclosures/beaches investigated. None of which implicated HIPAA or federal law concerns or state law privacy concerns, said Ms. Bass. The affected members were notified and the KPPA took steps to ensure that the disclosed information was not disseminated further and was retrieved. Ms. Bass directed the Committee Members to the meeting material for additional information on each case.

Next, Ms. Bass introduced Ms. Stephanie Hold who recently joined the KPPA Office of Legal Services as an Investigator II. Ms. Hold will be presenting to the KPPA Audit Committee in the future, said Ms. Bass. Next, Ms. Bass presented Anonymous Tips. She reported that only one tip had been received since the last meeting of the KPPA Audit Committee. However, seven cases remained open as of the meeting date.

Mr. Daugherty briefly presented the FY 2024 Auditor Independence Statements signed by KPPA Division of Internal Audit staff. Then, he reviewed the Status of Current Internal Audit Projects with the KPPA Audit Committee. The Committee requested that Mr. Daugherty further review the high number of 'Total Administrative Hours' and follow-up with a detailed explanation at the next meeting of the KPPA Audit Committee.

Lastly, the Update on Self-Assessment Project was presented by Mr. Daugherty. There was discussion regarding who received/were asked to complete a Self-Assessment Survey and how the survey should be completed. Due to lack of exposure, many advised that they were unable to complete the survey. It was agreed that the ‘don’t know’ option would be selected for areas in which additional information would be required. Mr. O’Mara requested that all Committee Members be given the opportunity to compete the survey. Mr. Eager suggested that the KPPA Division of Internal Audit discuss with staff regarding who would have the best insight to complete the Self-Assessment Survey.

Mr. O’Mara introduced the agenda item ***Professional Articles*** *(Video 01:19:51 to 01:25:07).* Ms. Evans presented professional article entitled “Tone at the Top” and other information on the topic of non-financial risk.

There being no further business, Mr. O’Mara ***adjourned*** the meeting.

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CERTIFICATION

I do certify that I was present at this meeting, and I have recorded above the action of the Committee on the various items considered by it at this meeting. Further, I certify that all requirements of KRS 61.805-61.850 were met in connection with this meeting.

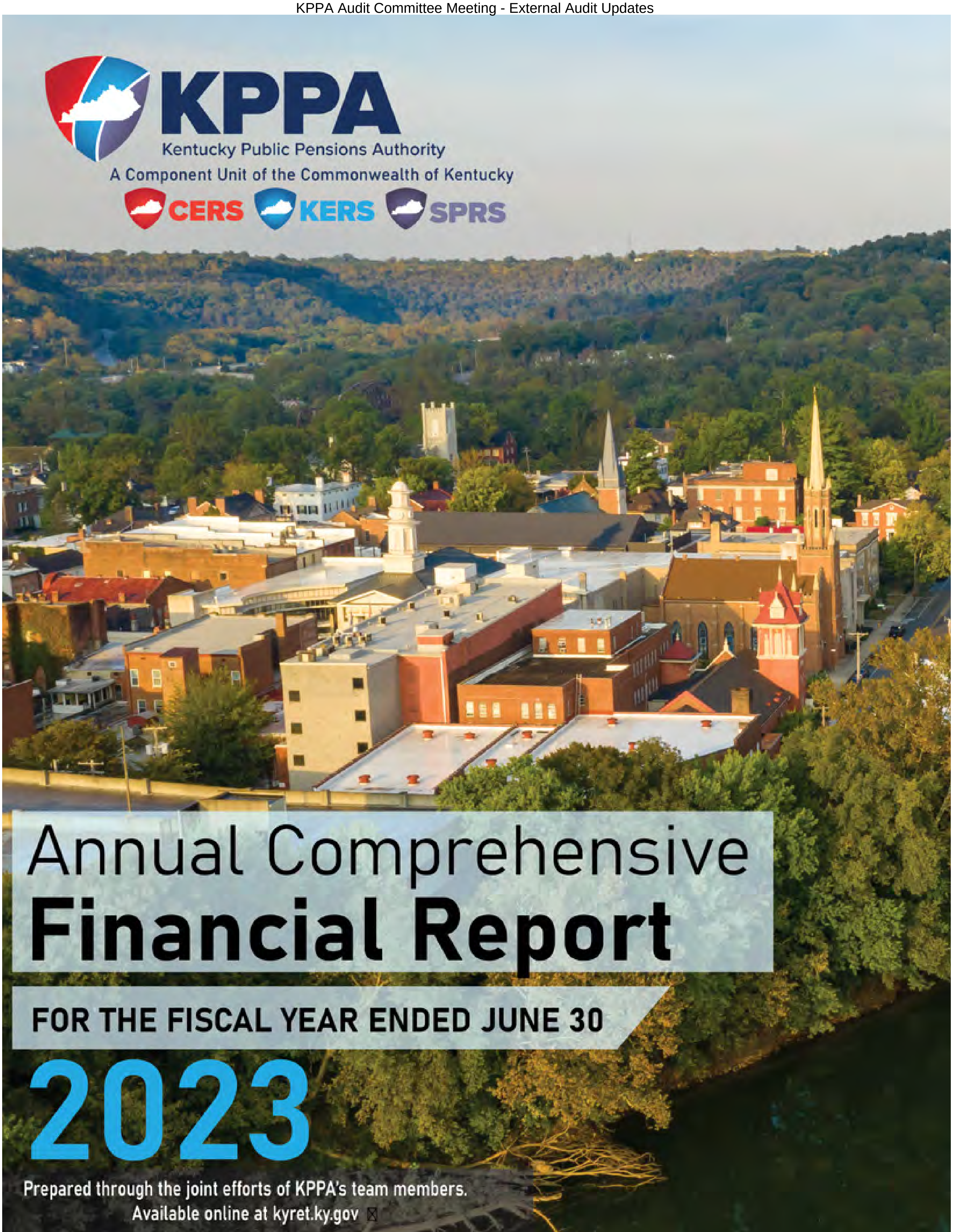
____
Recording Secretary

I, as Chair of the Audit Committee of the Kentucky Public Pensions Authority, do certify that the Minutes of the meeting held on August 24, 2023, were approved by the Audit Committee on November 27, 2023.

____
Committee Chair

I have reviewed the Minutes of the Audit Committee Meeting on August 24, 2023, for form, content, and legality.

____
Executive Director
Office of Legal Services



KPPA

Kentucky Public Pensions Authority

A Component Unit of the Commonwealth of Kentucky

CERS KERS SPRS

Annual Comprehensive **Financial Report**

FOR THE FISCAL YEAR ENDED JUNE 30

2023

Prepared through the joint efforts of KPPA's team members.

Available online at kyret.ky.gov

TABLE OF CONTENTS

INTRODUCTION

FINANCIAL

REQUIRED SUPPLEMENTARY INFORMATION

2023 Annual Comprehensive Financial Report
For The Fiscal Year Ended June 30, 2023

TABLE OF CONTENTS

INVESTMENTS

ACTUARIAL

STATISTICAL

INTRODUCTION
TABLE OF CONTENTS

Management's Responsibility for Financial Reporting

Management has prepared the combining financial statements of Kentucky Public Pensions Authority (KPPA) and is responsible for the integrity and fairness of the information presented.

December 6, 2023: Management has prepared the combining financial statements of KPPA and is responsible for the integrity and fairness of the information presented. Some amounts included in the combining financial statements may be based upon estimates and judgements. These estimates and judgements were made utilizing the best business practices available. The accounting policies followed in the preparation of these combining financial statements conform to U.S. Generally Accepted Accounting Principles (GAAP). Financial information presented throughout the annual report is consistent with the combining financial statements.

Responsibility: Ultimate responsibility for the combining financial statements and Annual Comprehensive Financial Report (ACFR) rests with the KPPA Board (Board). The Executive Director and KPPA staff assist the Board in its responsibilities.

Systems of internal control and supporting procedures are maintained to provide assurance that transactions are authorized, assets safeguarded, and proper records maintained. These controls include standards in hiring and training employees, the establishment of an organizational structure, and the communications of policies and guidelines throughout the organization. The cost of a control should not exceed the benefits to be derived; the objective is to provide reasonable, rather than absolute, assurance that the combining financial statements are free of any material misstatements. These internal controls are reviewed by internal audit programs. All internal audit reports are submitted to the KPPA Audit Committee, KPPA, CERS and KRS Boards.

The Auditor of Public Accounts (APA) has conducted an independent audit of the combining financial statements in accordance with U.S. Generally Accepted Government Auditing Standards. This audit is described in their Independent Auditors' Report on pages 16 through 19 in the Financial Section. Management has provided the external auditors with full and unrestricted access to KPPA's staff to discuss their audit and related findings as to the integrity of the plan's financial reporting and the adequacy of internal controls for the preparation of combining financial statements.

KPPA
Kentucky Public Pensions Authority

David Eager

David L. Eager
Executive Director

M. Lamb

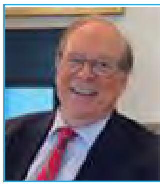
Michael B. Lamb, CPA
Chief Financial Officer

Rebecca H. Adkins
Deputy Executive Director

Connie Davis

Connie Davis, CIA, CGAP, CRMA
Director of Accounting

EXECUTIVE DIRECTOR'S MESSAGE



David L. Eager
Executive Director

December 6, 2023

To the Trustees & Membership

On behalf of the Kentucky Public Pensions Authority and the Boards of the County Employees Retirement System (CERS) and the Kentucky Retirement Systems (KRS), it is my honor to present the Annual Comprehensive Financial Report for the Fiscal Year (FY) ended June 30, 2023. This report, and the Summary Annual Financial Report, are provided as a resource for understanding the KPPA structure and the financial status of the systems KPPA operates.

Total assets in the systems administered by the Kentucky Public Pensions Authority (KPPA) increased to a record $24.9 billion in Fiscal Year (FY) 2023, buoyed by strong investment returns, General Fund appropriations authorized by the legislature, and employer contributions. The blended FY return for all of the CERS and KRS hazardous and nonhazardous pension funds was 9.54%, while the blended return for the CERS and KRS hazardous and nonhazardous insurance trust fund was 10.15%.

Investment performance by system can be found on page 129. More information can be found in the Investments section of the KPPA website.

Those strong investment returns exceeded the median peer pension fund return of 7.64%, the target returns for those portfolios, and the actuarially assumed rates of return, which were 5.25% for the Kentucky Employees Retirement System (KERS) Nonhazardous and State Police Retirement System (SPRS) pension funds and 6.25% for all other pension and insurance funds.

Funding Improves

Thanks to strong investment returns for FY 2023 and funding approved by the General Assembly over and above the actuarially determined contribution (ADC) for KERS Nonhazardous and SPRS, as well as changes in some actuarial assumptions for CERS, the funded ratio of all three pension systems improved from FY 2022.

Pension Funded Ratio

	2018	2019	2020	2021	2022	2023
CERS NH	52.7%	49.1%	49.4%	51.8%	52.0%	56.1%
CERS H	48.4%	45.3%	45.1%	46.7%	47.6%	51.4%
KERS NH	12.9%	13.4%	14.2%	16.8%	18.5%	21.8%
KERS H	55.5%	54.8%	55.3%	60.4%	63.2%	65.4%
SPRS	27.1%	27.0%	28.1%	30.7%	52.5%	54.0%

Insurance Funded Ratio

	2018	2019	2020	2021	2022	2023
CERS NH	76.7%	70.7%	78.5%	85.4%	132.1%	131.5%
CERS H	74.6%	75.8%	78.2%	84.3%	101.0%	100.7%
KERS NH	36.4%	36.3%	42.7%	50.2%	79.1%	81.7%
KERS H	130.0%	123.1%	126.0%	135.5%	172.2%	170.4%
SPRS	71.6%	71.3%	75.0%	82.0%	100.6%	100.5%

Commitments by the General Assembly and the Governor to fully fund contributions, and provide additional allocations, combined with prudent management by the Office of Investments and other staff, have all five pension funds on track to be fully funded by 2049.

To read the full actuarial reports, visit the Actuarial Valuations page on our website, under the Publications & Forms tab.

Ratings Boosts

Both S&P Global Ratings and Fitch Ratings raised their credit ratings for the Commonwealth in FY 2023. Governor Andy Beshear said on June 29, "We're showing everyone that our economy is booming, our pension systems are strong and our fiscal house is in order due to strong management."

For Fiscal Year 2023, the General Assembly allocated the full actuarially recommended contribution. Additionally, legislation passed in the 2022 General Assembly made additional appropriations to the KERS Nonhazardous plan of $240 million for FY 2023 and FY 2024, and to the State Police Retirement System (SPRS) of $215 million.

Strategic Plan

In March 2023 Provaliant Retirement, LLC of Scottsdale, Arizona, was selected through an RFP process to assist KPPA in developing the agency's first strategic plan since 2009. Provaliant is tasked with helping KPPA identify ways to improve efficiency, productivity, the quality of service delivery, governance practices, retaining and motivating employees, and promoting the best interest of members and stakeholders.

KPPA will collaborate with the CEOs and Trustees of CERS and KRS to develop strategic plans that are specific to each entity but that also complement one another. This months-long process is expected to yield plans with actions that will be implemented over time, in some cases years.

EXECUTIVE DIRECTOR'S MESSAGE

Financial Management

KPPA hired its first Chief Financial Officer, Michael Lamb, who is responsible for oversight of the accounting, budgeting, cash management, risk management, and procurement for KPPA, and for developing and maintaining accounting controls, conducting financial operations, and producing financial reporting for all of the systems operated by KPPA. Previously Mr. Lamb was General Manager, Enterprise Risk Management and Audit at Toyota Tusho America (TAI) Inc., in Georgetown, KY.

Cybersecurity

KPPA continues to make the security of our members' information our highest priority. Nation-wide news reports of cyberattacks and data breaches at large companies and government agencies are unfortunately all too frequent. Our Enterprise and Technology Services staff monitor an ever-changing cyberthreat landscape and take a variety of proactive measures to protect both member information and KPPA resources. All KPPA staff are routinely trained in cybersecurity issues to ensure they recognize suspicious activity and work to keep KPPA data secure, and security topics are covered in KPPA member newsletters to increase member security awareness. KPPA also has ongoing agency-wide planning and readiness efforts in disaster recovery, business continuity, and incident response.

Report from CERS CEO Ed Owens III

This fiscal year has been an exciting one for the CERS Board of Trustees and its membership. Our FY 2023 Actuarial Valuation shows we had an estimated annual return on net assets of over 10% for both the pension and insurance plans. Those returns ranked in the top five for public pension systems nationwide.

The Board increased the assumed rate of return from 6.25% to 6.50% for all four plans. This has the effect of lowering the employer contribution rate and decreasing our unfunded liability. Our pension plans are now approximately 56% funded while our insurance plans are over 100% funded.

Although employer contributions were lowered, the pension plans received approximately the same dollar amount of contributions as in the prior fiscal year due to strong growth in active membership and covered payroll.

The CERS Investment Committee and the Board are now focused on reviewing the system's asset allocation and making changes where appropriate. The goal will be to target the same level of investment return while reducing the amount of risk in the portfolio.

The Board of Trustees and I remain focused on protecting the assets of the CERS Trust while we ensure excellent service to the CERS members.

Report from KRS CEO John Chilton

As a part of the FY 2023 and 2024 budgets, the General Assembly provided full funding for the actuarially determined pension and health insurance contributions, plus additional amounts totaling $695 million over fiscal years 2022 through 2024. The progress toward fully funding the actuarial liabilities will continue.

The KRS trustees continue to follow the evolving world of Environmental, Social, and Governance (ESG) issues as they relate to investments. In response to legislation passed in the 2023 Regular Session, KRS' corporate proxy voting history will be posted quarterly on the KPPA website. (Many ESG issues are addressed in corporate governance proposals by the corporations in which we invest.) Additionally, and importantly, the KRS Board monitors ongoing litigation in anticipation of favorably resolving longstanding cases.

This year, the Investment Committee worked with the KPPA Office of Investments to monitor KRS investments with a view to maximizing investment returns while minimizing investment risks. In fiscal year 2023, KPPA, CERS, and KRS have worked to further upgrade the Office of Investments team by adding investment professionals. Further staff additions are planned for FY 2024.

A Personal Update

In 2023, I signed a one-year contract that will end with my retirement. KPPA has formed a search committee comprising members of the KRS and CERS boards, which is in the process of identifying candidates to be the next KPPA Executive Director.

It has been my great honor to have served as KPPA's Executive Director these past eight years. During that time, KPPA has worked hard to improve member servicing. We enhanced our relationships with key stakeholders including members of the State Legislature and the Executive Branch, as well as retiree groups, members of the media, and the general public. And, we successfully strengthened employee morale, with 94% of our employees agreeing that they feel part of the KPPA team. KPPA is like a family, and I have been fortunate to have been a part of that family. No matter who sits in the Executive Director's office, KPPA's commitment to our Six Mandates will not waver, nor will our commitment to serving the retirees of state and local government and the State Police. KPPA will never stop working for our Members.

Acknowledgments

The preparation of this report has been a collaborative effort of KPPA Executive Management and the Accounting Division, Communications Division, Office of Investments, and the CERS and KRS CEOs. The contents have been reviewed by the Internal Audit Division. KPPA is responsible for all the information in the report and confidently presents it as a basis for understanding the stewardship of the systems operated by KPPA.

AGENCY STRUCTURE

As of December 6, 2023

The Kentucky Public Pensions Authority oversees the operations of CERS, KERS, and SPRS by providing administrative support, investment management, and conducting daily activities on behalf of the CERS, KRS, and KPPA Boards. The 8-member KPPA Board is made up of elected and appointed representatives from the CERS and KRS Boards. KPPA is led by an Executive Director who is appointed by the KPPA Board to work with the CERS and KRS Chief Executive Officers to carry out the statutory provisions of the Systems.

KPPA Kentucky Public Pensions Authority

KPPA BOARD
Four (4) CERS and Four (4) KRS Board Representatives

*Elected to position by KPPA Board

Keith Peercy
KPPA Chair*
Selected by KRS Chair

Jerry W. Powell
KPPA Vice Chair*
Selected by CERS Chair

Betty Pendergrass
CERS Board Chair

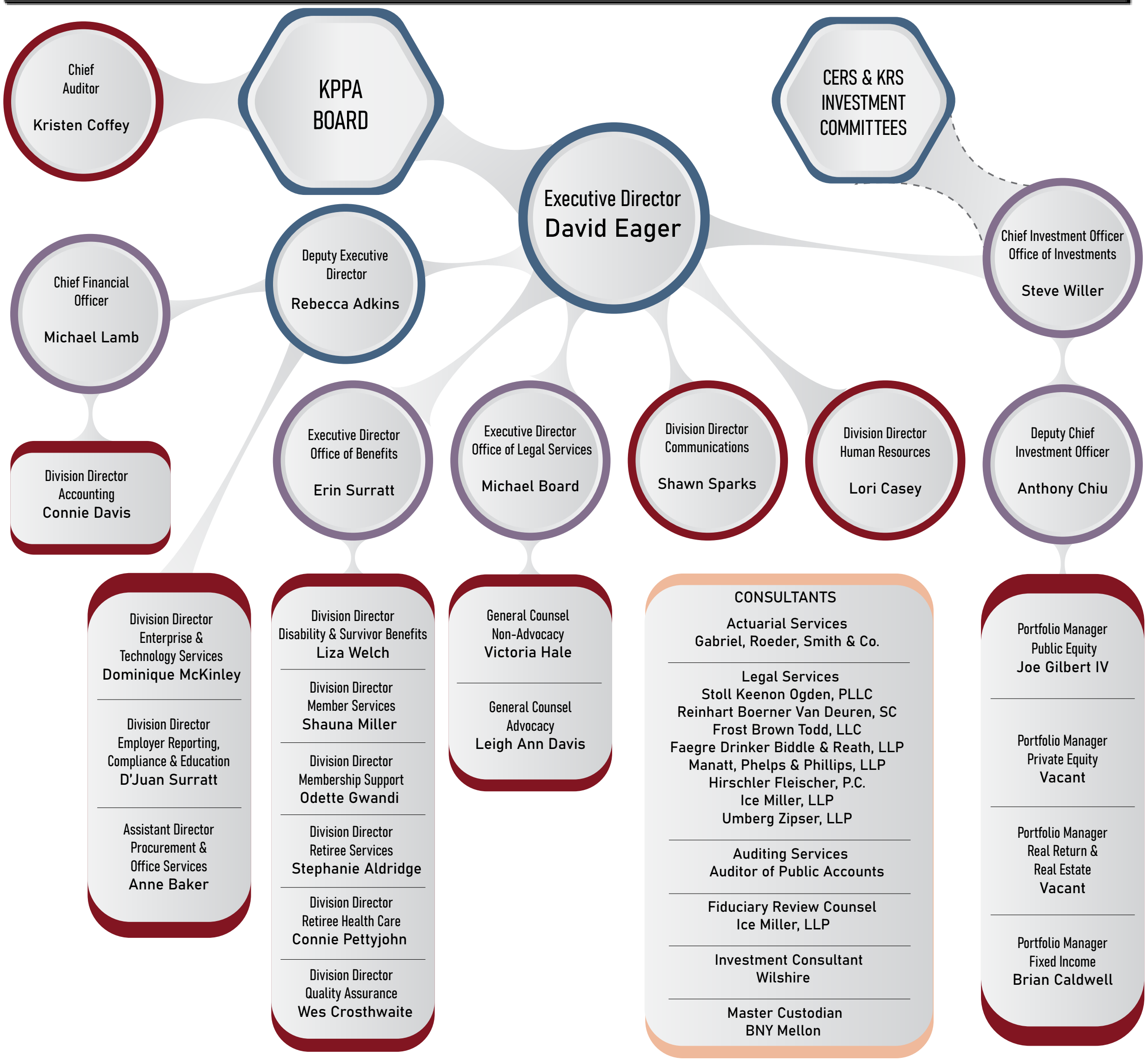
Ellen Lynn Hampton
KRS Board Chair

Dr. Merl Hackbart
CERS Investment Committee Chair

C. Prewitt Lane
KRS Investment Committee Chair

William O'Mara
CERS Trustee
Selected by CERS Chair

William Summers V
KRS Trustee
Selected by KRS Chair



Refer to the Investments Section for additional information regarding Investment Advisors (pages 137-142) and Schedules of Fees and Expenses (pages 143-144).

GOVERNANCE

As of December 6, 2023

The systems operated by KPPA are governed by two 9-member boards of trustees, each consisting of three elected members and six gubernatorial appointees serving four-year terms. The CERS Board of Trustees is responsible for governance of the CERS funds. The governance of the KERS funds and the SPRS funds are the responsibility of the KRS Board of Trustees. CERS and KRS each have a Chief Executive Officer who serves as a legislative and executive advisor to the respective boards and a General Counsel who provides legal services.

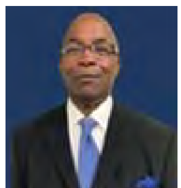
ELECTED BY MEMBERSHIP

APPOINTED BY GOVERNOR: The Governor selects appointees from lists of candidates provided by the Kentucky Association of Counties (KACo), the Kentucky League of Cities (KLC), and the Kentucky School Boards Association (KSBA).

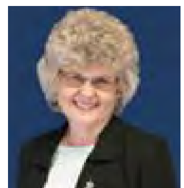
CERS BOARD OF TRUSTEES

Betty Pendergrass, Chair
George Cheatham, Vice Chair

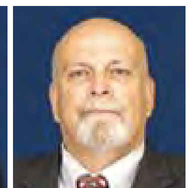
General Counsel: Johnson Bowman Branco, LLP
Three (3) Elected Trustees
Six (6) Appointed by Governor



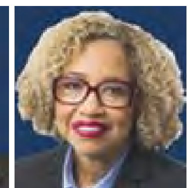
Ed Owens III
CERS Chief Executive Officer



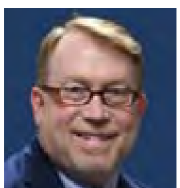
Betty Pendergrass
Chair
Term ends March 31, 2025



Jerry Wayne Powell
Term ends March 31, 2025



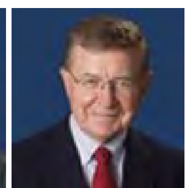
Dr. Patricia P. Carver
Term ends March 31, 2025



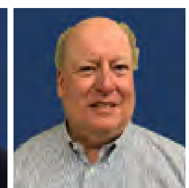
George Cheatham
Vice Chair
Term ends March 31, 2025

J. Michael Foster
Term ends July 1, 2021*
Nominated by KACo

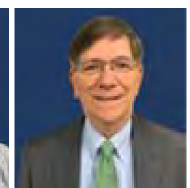
J.T. Fulkerson
Term ends July 1, 2021*
Nominated by KLC



Dr. Merl Hackbart
Term ends March 31, 2025
Nominated by KACo



Dr. Martin Milkman
Term ends July 1, 2025
Nominated by KSBA



William O'Mara
Term ends March 31, 2025
Nominated by KLC

*Trustee continues to serve until the Governor makes an appointment to fill the trustee position.

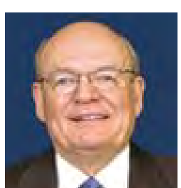
ELECTED BY MEMBERSHIP

APPOINTED BY GOVERNOR

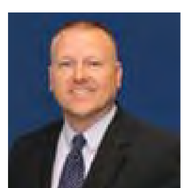
KRS BOARD OF TRUSTEES

Ellen Lynn Hampton, Chair
C. Prewitt Lane, Vice Chair

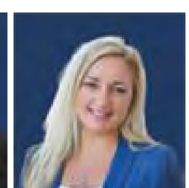
General Counsel: Dentons Bingham Greenebaum
Three (3) Elected Trustees
Six (6) Appointed by Governor



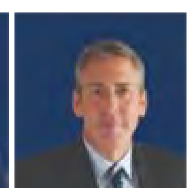
John E. Chilton
KRS Chief Executive Officer



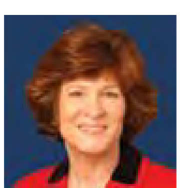
Keith Peercy
Term ends March 31, 2027
Elected by SPRS



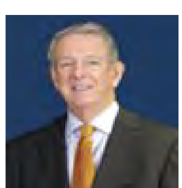
Dr. Crystal Miller
Term ends March 31, 2026
Elected by KERS



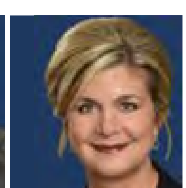
David Adkins
Term ends March 31, 2026
Elected by KERS



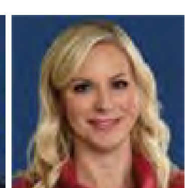
Ellen Lynn Hampton
Chair
Term ends June 17, 2026



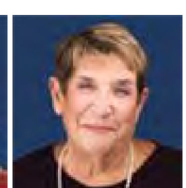
C. Prewitt Lane
Vice Chair
Term ends June 17, 2027



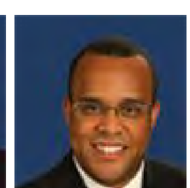
Pamela F. Thompson
Term ends June 17, 2027



Ramsey Bova
Term ends June 17, 2026



Mary G. Eaves
Term ends June 21, 2027



William Summers V
Term ends June 17, 2026

Professional Awards

CERTIFICATE OF ACHIEVEMENT FOR EXCELLENCE IN FINANCIAL REPORTING

The Government Finance Officers Association (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Kentucky Public Pensions Authority for its Annual Comprehensive Financial Report for the Fiscal Year ended June 30, 2022. The Certificate of Achievement is a prestigious national award recognizing excellence in the preparation of state and local government financial reports and is valid for a period of one year. This is the 24th award earned by Kentucky Public Pensions Authority (formerly the Kentucky Retirement Systems). In order to be awarded a Certificate of Achievement, a government unit must publish an easily readable and efficiently organized document. The report must satisfy both generally accepted accounting principles and applicable legal requirements. We believe our 2023 report will continue to meet the Certificate of Achievement Program's requirements, and we will be submitting it to the GFOA for their consideration.

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Kentucky Public Pensions Authority

For its Annual Comprehensive Financial Report For the Fiscal Year Ended

June 30, 2022

Christopher P. Morrill

Executive Director/CEO

PUBLIC PENSIONS STANDARDS AWARD FOR FUNDING AND ADMINISTRATION

The Public Pension Coordinating Council awarded the Public Pensions Standards Award for Funding and Administration to the Kentucky Public Pensions Authority (KPPA) for 2023. This is the second award earned by KPPA.

The Public Pension Coordinating Council established the Public Pension Standards to reflect minimum expectations for public retirement system management, administration, and funding. The Standards serve as a benchmark to measure public defined benefit plans. The Award for Funding and Administration is a distinguished national award recognizing pension programs meeting professional standards for plan design and administration as set forth in the Public Pension Standards. This award is valid for a period of one year. We believe KPPA will continue to meet these standards, and we will be applying for the award next year.

PPC

Public Pension Coordinating Council

Public Pension Standards Award For Funding and Administration 2023

Presented to

Kentucky Public Pensions Authority

In recognition of meeting professional standards for plan funding and administration as set forth in the Public Pension Standards.

Presented by the Public Pension Coordinating Council, a confederation of

National Association of State Retirement Administrators (NASRA)
National Conference on Public Employee Retirement Systems (NCPERS)
National Council on Teacher Retirement (NCTR)

Alan H. Winkle
Program Administrator

2023 Total Fiscal Year KPPA Pension Benefits Paid by County (in whole $)								
County	Payees*	Total	County	Payees*	Total	County	Payees*	Total
Adair	546	$9,450,928	*Grant*	663	$12,632,492	*McLean*	328	$4,697,725
Allen	453	6,195,939	*Graves*	970	15,499,440	*Meade*	515	7,651,712
Anderson	1,453	36,414,367	*Grayson*	860	13,876,998	*Menifee*	229	3,427,101
Ballard	264	3,853,581	*Green*	349	5,063,164	*Mercer*	826	14,965,991
Barren	1,176	17,713,891	*Greenup*	716	10,407,642	*Metcalfe*	328	4,381,967
Bath	423	6,687,345	*Hancock*	233	3,276,736	*Monroe*	301	3,655,016
Bell	708	11,491,733	*Hardin*	2,445	41,805,463	*Montgomery*	710	12,011,878
Boone	2,082	44,361,813	*Harlan*	660	10,033,044	*Morgan*	675	11,712,383
Bourbon	566	9,387,391	*Harrison*	502	8,199,335	*Muhlenberg*	840	11,257,321
Boyd	1,093	18,279,869	*Hart*	375	5,674,876	*Nelson*	1,194	21,582,376
Boyle	901	16,000,603	*Henderson*	1,180	20,061,538	*Nicholas*	223	3,215,898
Bracken	243	3,455,552	*Henry*	950	21,528,225	*Ohio*	681	7,987,304
Breathitt	528	8,309,077	*Hickman*	99	1,760,173	*Oldham*	1,438	30,825,732
Breckinridge	528	8,071,368	*Hopkins*	1,338	21,150,807	*Owen*	528	12,294,709
Bullitt	1,786	33,646,001	*Jackson*	354	4,683,606	*Owsley*	225	3,308,145
Butler	339	4,843,433	*Jefferson*	16,615	369,906,868	*Pendleton*	398	6,918,332
Caldwell	551	8,797,076	*Jessamine*	1,186	21,082,368	*Perry*	822	11,864,046
Calloway	1,148	16,849,921	*Johnson*	650	9,838,165	*Pike*	1,333	20,148,508
Campbell	1,633	32,119,113	*Kenton*	2,443	52,812,566	*Powell*	372	5,228,395
Carlisle	123	1,869,046	*Knott*	469	7,261,918	*Pulaski*	2,416	40,797,909
Carroll	336	5,602,948	*Knox*	650	10,158,452	*Robertson*	75	1,240,583
Carter	853	11,619,504	*LaRue*	409	6,665,674	*Rockcastle*	426	6,154,513
Casey	391	5,108,884	*Laurel*	1,367	22,660,418	*Rowan*	928	16,039,774
Christian	1,581	28,502,771	*Lawrence*	355	4,371,418	*Russell*	599	9,240,811
Clark	900	15,988,698	*Lee*	245	3,588,983	*Scott*	1,405	29,426,953
Clay	621	9,093,539	*Leslie*	278	4,182,851	*Shelby*	1,712	43,232,674
Clinton	319	4,220,477	*Letcher*	643	8,994,282	*Simpson*	321	4,046,578
Crittenden	233	3,368,253	*Lewis*	350	4,833,582	*Spencer*	581	13,361,441
Cumberland	202	2,968,583	*Lincoln*	730	9,573,329	*Taylor*	701	10,512,823
Daviess	2,889	52,148,288	*Livingston*	277	4,700,986	*Todd*	277	3,827,202
Edmonson	251	3,469,987	*Logan*	694	9,884,710	*Trigg*	566	9,423,519
Elliott	191	2,967,958	*Lyon*	363	7,412,991	*Trimble*	294	4,896,589
Estill	443	6,410,920	*Madison*	2,596	43,759,733	*Union*	392	4,650,980
Fayette	5,737	123,989,056	*Magoffin*	393	5,498,842	*Warren*	3,077	54,675,517
Fleming	507	8,412,462	*Marion*	587	8,611,210	*Washington*	369	5,922,484
Floyd	937	14,940,218	*Marshall*	965	14,691,500	*Wayne*	593	8,496,787
Franklin	6,277	194,303,907	*Martin*	278	3,274,633	*Webster*	382	5,098,924
Fulton	188	2,369,118	*Mason*	432	7,243,868	*Whitley*	1,219	17,591,520
Gallatin	129	2,255,537	*McCracken*	1,650	30,244,225	*Wolfe*	351	5,883,586
Garrard	474	$7,007,182	*McCreary*	426	$4,485,575	*Woodford*	1,125	$28,324,791

Pension Benefits paid to retirees and beneficiaries of Kentucky Public Pensions Authority have a wide ranging impact on the state's economic health. In fiscal year 2023, KPPA paid over $2 billion to its recipients. The majority, 92.79%, of these payments are issued to Kentucky residents. Each county in the Commonwealth receives at least $1 million annually from KPPA, providing a stabilizing element for all local economies.

Total Retirement Payments For the Period ending June 30, 2023 (in Whole $)			
	Payees	%	Payments
Retirement Eligible/Actuarial Refund **	636		$9,453,983
Kentucky	116,523	92.79%	2,193,919,524
Out of State	9,843	7.21%	170,466,194
Grand Total	**126,366**	**100.00%**	**$2,364,385,718**

**This table represents all payees receiving a monthly payment, retirement eligible refund, or actuarial refund during the fiscal year.*

*** Included in Kentucky and Out of State Payees and Payments, therefore, are not included in Grand Total Amount and percentage.*

Benefit Tiers

KPPA administers three different benefit tiers. Each plan provides pension and insurance benefits based on the member's participation date:

- Tier 1: Members with a participation date prior to September 1, 2008.
- Tier 2: Members with a participation date of September 1, 2008 through December 31, 2013.
- Tier 3: Members with a participation date on or after January 1, 2014.

Membership as of June 30, 2023 (in Whole $)

Item	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS	KPPA Total 2023
Members	255,055	22,316	126,830	14,556	2,852	421,609
Active Membership	81,217	9,181	30,854	3,875	868	125,995
Tier 1	22,824	2,798	12,091	865	325	38,903
Tier 2	10,859	1,709	4,709	564	180	18,021
Tier 3	47,534	4,674	14,054	2,446	363	69,071
Average Annual Salary	$36,782	$73,654	$51,489	$54,452	$75,937	-
Average Age	47.3	38.1	45.7	39.7	36.9	-
Retired Membership	66,935	9,448	44,975	3,459	1,552	126,369
Tier 1	65,221	9,407	44,447	3,390	1,550	124,015
Tier 2	1,553	32	473	60	1	2,119
Tier 3	161	9	55	9	1	235
Average Annual Benefit	$12,284	$29,602	$21,206	$16,123	$39,738	-
Average Age	71.3	62.9	70.8	66.0	64.4	-
Inactive Members	106,903	3,687	51,001	7,222	432	169,245
Tier 1	47,781	1,371	29,859	1,767	167	80,945
Tier 2	17,893	605	8,565	1,255	69	28,387
Tier 3	41,229	1,711	12,577	4,200	196	59,913

CERS was established on July 1, 1958 by the State Legislature.

CERS Nonhazardous - Fiduciary Net Position* ($ in Thousands)			
Year	Pension	Insurance	Total
2014	$6,528,146	$1,878,711	**$8,406,857**
2015	6,440,800	1,920,946	**8,361,746**
2016	6,141,396	1,908,550	**8,049,946**
2017	6,739,142	2,160,553	**8,899,695**
2018	7,086,322	2,346,767	**9,433,089**
2019	7,242,975	2,486,458	**9,729,433**
2020	7,110,889	2,498,051	**9,608,940**
2021	8,670,667	3,141,786	**11,812,453**
2022	8,062,346	2,981,224	**11,043,570**
2023	$8,781,440	$3,289,533	**$12,070,973**

CERS Hazardous - Fiduciary Net Position* ($ in Thousands)			
Year	Pension	Insurance	Total
2014	$2,087,002	$1,030,303	**$3,117,305**
2015	2,078,202	1,056,480	**3,134,682**
2016	2,010,177	1,056,097	**3,066,274**
2017	2,227,679	1,179,313	**3,406,992**
2018	2,361,047	1,268,272	**3,629,319**
2019	2,429,613	1,324,809	**3,754,422**
2020	2,395,688	1,305,132	**3,700,820**
2021	2,934,421	1,607,811	**4,542,232**
2022	2,736,928	1,503,977	**4,240,905**
2023	$3,055,797	1,613,586	**$4,669,383**

KERS was established on July 1, 1956 by the State Legislature.

KERS Nonhazardous - Fiduciary Net Position* ($ in Thousands)			
Year	Pension	Insurance	Total
2014	$2,578,290	$646,905	**$3,225,195**
2015	2,327,782	665,639	**2,993,421**
2016	1,980,292	668,318	**2,648,610**
2017	2,092,781	781,406	**2,874,187**
2018	2,048,890	846,762	**2,895,652**
2019	2,286,625	942,136	**3,228,761**
2020	2,362,231	1,006,498	**3,368,729**
2021	3,085,014	1,353,123	**4,438,137**
2022	3,076,743	1,301,522	**4,378,265**
2023	$3,607,206	$1,465,489	**$5,072,695**

KERS Hazardous - Fiduciary Net Position* ($ in Thousands)			
Year	Pension	Insurance	Total
2014	$561,484	$433,525	**$995,009**
2015	552,468	439,113	**991,581**
2016	527,880	437,397	**965,277**
2017	605,921	484,442	**1,090,363**
2018	651,173	513,384	**1,164,557**
2019	687,877	527,108	**1,214,985**
2020	697,366	514,740	**1,212,106**
2021	874,928	624,889	**1,499,817**
2022	819,237	579,902	**1,399,139**
2023	$902,567	$616,322	**$1,518,889**

SPRS was established on July 1, 1958 by the State Legislature.

SPRS - Fiduciary Net Position* ($ in Thousands)			
Year	Pension	Insurance	Total
2014	$260,974	$164,958	**$425,932**
2015	247,229	164,714	**411,943**
2016	218,013	160,949	**378,962**
2017	256,383	178,191	**434,574**
2018	268,425	189,994	**458,419**
2019	287,242	200,128	**487,370**
2020	295,044	200,245	**495,289**
2021	357,660	246,004	**603,664**
2022	552,926	230,015	**782,941**
2023	$592,826	$246,797	**$839,623**

KPPA Total Fiduciary Net Position

Fiduciary Net Position ($ in Thousands)			
Year	**Pension**	**Insurance**	**Total**
2014	$12,015,897	$4,154,401	**$16,170,298**
2015	11,646,481	4,246,892	**15,893,373**
2016	10,877,758	4,231,311	**15,109,069**
2017	11,921,906	4,783,905	**16,705,811**
2018	12,415,856	5,165,179	**17,581,035**
2019	12,934,332	5,480,639	**18,414,971**
2020	12,861,218	5,524,666	**18,385,884**
2021	15,922,690	6,973,613	**22,896,303**
2022	15,248,180	6,596,640	**21,844,820**
2023	$16,939,836	$7,231,727	**$24,171,563**

** The Fiduciary Net Positions are the resources accumulated and held in trust to pay benefits.*

FINANCIAL
TABLE OF CONTENTS

MIKE HARMON
AUDITOR OF PUBLIC ACCOUNTS

Independent Auditor's Report

To the Members
Kentucky Public Pensions Authority

Report on the Audit of the Financial Statements

Opinion

We have audited the accompanying financial statements of Kentucky Public Pensions Authority (KPPA), a (discretely presented) component unit of the Commonwealth of Kentucky, as of and for the year ended June 30, 2023, and the related notes to the financial statements, which collectively comprise KPPA's financial statements as listed in the table of contents.

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of KPPA as of June 30, 2023, and the changes in its fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of KPPA and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Emphasis-of-Matter - Reporting Entity

As discussed in Note A, the financial statements present only the KPPA, and are not intended to present fairly the financial position of the Commonwealth of Kentucky, or the results of its operations in conformity with accounting principles generally accepted in the United States of America. Our opinion is not modified with respect to this matter.

Responsibilities of Management for the Financial Statements

KPPA's management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about KPPA's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS, we

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of KPPA's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about KPPA's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Other Matter - Summarized Comparative Information

The financial statements of KPPA for the year ended June 30, 2022, were audited by another auditor, who expressed an unmodified opinion on those statements on December 7, 2022. In our opinion, the summarized comparative information presented herein as of and for the year ended June 30, 2022 is consistent, in all material respects, with the audited financial statements from which it has been derived.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis on pages XXXX through XXXX and the defined benefit pension plan and other post-employment benefit supplemental schedules on pages XXXX through XXXX, be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information

Our audit was conducted for the purpose of forming an opinion on the financial statements as a whole. The accompanying schedules of administrative expense, direct investment expense, and professional consultant fees are presented for purposes of additional analysis and are not a required part of the financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is fairly stated, in all material respects, in relation to the financial statements as a whole.

Other Information

Management is responsible for the other information included in the annual comprehensive annual report. The other information comprises the introductory, investment, actuarial and statistical sections but does not include the financial statements and our auditor's report thereon. Our opinions on the financial statements do not cover the other information, and we do not express an opinion or any form of assurance thereon. In connection with our audit of the financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the financial statements, or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated November 27, 2023 on our consideration of KPPA's internal control over financial reporting and on our test of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering KPPA's internal control over financial reporting and compliance.

Respectfully Submitted,

Farrah Petter, CPA
Assistant Auditor of Public Accounts
Frankfort, Ky

November 27, 2023

Management's Discussion & Analysis (Unaudited)

This section provides a discussion and analysis of the financial performance of the retirement and OPEB plans administered by the Kentucky Public Pensions Authority (KPPA) for the year ended June 30, 2023. The discussion and analysis of the plans' financial performance is within the context of the accompanying basic financial statements, notes to the financial statements, required supplementary schedules, and additional information following this section.

KPPA is responsible for administering cost-sharing, multiple-employer defined benefit pension plans for various employer agencies of Kentucky, along with a single-employer defined benefit pension plan and defined benefit OPEB plans. All plans are fiduciary plans.

The defined benefit pension plans include:
County Employees Retirement System (includes CERS Nonhazardous and CERS Hazardous)
Kentucky Employees Retirement System (includes KERS Nonhazardous and KERS Hazardous)
State Police Retirement System

The defined benefit OPEB plans are in the Kentucky Retirement System Insurance Trust Fund. The Insurance Fund provides health benefits for CERS Nonhazardous, CERS Hazardous, KERS Nonhazardous, KERS Hazardous, and SPRS plans for retired members and beneficiaries.

The Management Discussion and Analysis is the KPPA leadership summary of the management of the CERS, KERS, and SPRS Fiduciary Pension Plans (collectively the Pension Funds) and Insurance Trust Fund. KPPA is a component unit of the Commonwealth of Kentucky, (the Commonwealth) for financial and reporting purposes.

PENSION FUNDS
The following highlights are explained in more detail later in this report.

Total Pension Funds Fiduciary Net Position was $15.2 billion at the beginning of the fiscal year and increased by 11.18% to $16.9 billion as of June 30, 2023. The $1.7 billion increase is primarily attributable to the appreciation in the fair value of investments.

CONTRIBUTIONS
Total contributions reported for fiscal year 2023 were $2,723.8 million compared to $2,653.1 million in fiscal year 2022. The increase is the result of a General Fund appropriation to KERS Nonhazardous in the amount of $240.0 million; the increase in employer contribution rates for CERS Nonhazardous and CERS Hazardous; as well as an increase in covered payroll for all funds. These increases were offset by a General Fund appropriation to SPRS of $215.0 million as well as Employer Cessation contributions of $63.1 million in 2022.

INVESTMENTS
The investment portfolio for the Pension Funds reported a net return of 9.54% for fiscal year 2023 compared to a net negative return of 5.73% for fiscal year 2022.

The net appreciation in the fair value of investments for fiscal year 2023 was $1,073.5 million compared to net depreciation of $1,175.9 million for the previous fiscal year.

Interest, dividends, and net securities lending income for fiscal year 2023 was $471.2 million compared to $431.2 million in fiscal year 2022. All investment returns are reported net of fees and investment expenses, including carried interests. Investment expenses totaled $171.6 million for fiscal year 2022 compared to $108.9 million in the current fiscal year. The decrease in fees is the result of less than favorable market conditions causing returns to drop, impacting those fees directly related to performance most notably Private Equity, Real Estate and Specialty Credit. in fiscal year 2023.

DEDUCTIONS
Pension benefits paid to retirees and beneficiaries for fiscal year 2023 totaled $2,380.1 million compared to $2,328.6 million in fiscal year 2022, a 2.21% increase. The increase was due to a 1.63% increase in the number of retirees to 126,369. Refunded contributions paid to former members upon termination of employment for fiscal year 2023 totaled $45.9 million compared to $42.9 million in fiscal year 2022, a 6.99% increase, as more members elected a refund at employment termination.

Management's Discussion & Analysis (Unaudited)

KPPA's fiscal year 2023 Pension administrative expense totaled $41.9 million compared to $39.7 million in the prior year. The increase was mainly due to the state pay increase in salaries and employee retirement benefits.

INSURANCE FUND

The following highlights are explained in more detail later in this report.

The combined fiduciary net position of the Insurance Fund increased by $635.1 million during fiscal year 2023. Total combined net position for the fiscal year was $7,231.7 million. Total contributions and net investment income of $997.8 million offset deductions of $362.7 million which resulted in the net position increase.

CONTRIBUTIONS

Employer contributions of $282.5 million were received in fiscal year 2023 compared to $319.0 million in fiscal year 2022. Total contributions changed (11.44)% primarily due to a decrease in Employer Contribution Rates, Humana Gain Share Payment, and Employer Cessation Contributions.

The reimbursement of retired/reemployed health insurance for fiscal year 2023 totaled $13.9 million compared to $12.7 million in the prior fiscal year. The increase is due to an increase in retired/re-employed members for whom employers are paying health insurance reimbursements.

INVESTMENTS

Interest, dividends, and net securities lending income for fiscal year 2023 was $200.5 million compared to $193.5 million in fiscal year 2022. The increase in income and dividends is the result of an increase in allocation to the public equities and fixed income asset classes.

The investment portfolio reported a net return of 10.15% for the fiscal year, which was higher than fiscal year 2022's net negative return of 5.34%. The investment return was above the 6.25% assumed rate of return used for actuarial calculations.

The net appreciation in the fair value of investments for fiscal year 2023 was $508.6 million compared to net depreciation of $(482.5) million for the previous fiscal year. This $991 million increase in fiscal year 2023 was due to favorable market returns compared to fiscal year 2022.

Investment expenses totaled $51.9 million for fiscal year 2023 compared to $84.0 million in the prior fiscal year. The decrease in fees is the result of less than favorable market conditions causing returns to drop, impacting those fees directly related to performance most notably Private Equity, Real Estate and Specialty Credit in fiscal year 2023.

DEDUCTIONS

Total insurance premiums, plus self-funded reimbursements were $360.2 million for fiscal year 2023. The fiscal year 2023 insurance premiums were $22.0 million less compared to fiscal year 2022, the number of covered lives only increased approximately 1% year-over-year.

Insurance administrative expenses for retirees under age 65, decreased from $2.45 million in fiscal year 2022 to $2.43 million in fiscal year 2023.

Management's Discussion & Analysis (Unaudited)

Using This Financial Report

Because of the long-term nature of a defined benefit pension plan and post-employment healthcare benefit plan, the combining financial statements alone cannot provide sufficient information to properly reflect the Plans' ongoing financial perspective. This financial report consists of three combining financial statements and two schedules of historical trend information. All plans within KPPA are included in the aforementioned combining financial statements. The Combining Statement of Fiduciary Net Position for the Pension Funds on page 29 and the Combining Statement of Fiduciary Net Position for the Insurance Fund on page 31 provide a snapshot of the financial position of each of the three systems as of fiscal year end 2023. The Combining Statement of Changes in Fiduciary Net Position for the Pension Funds on page 30 , and the Combining Statement of Changes in Fiduciary Net Position for the Insurance Fund on page 31 , summarize the additions and deductions that occurred for each of the ten funds during fiscal year 2023.

The economic assumptions for the Pension Funds and Insurance Fund for fiscal year 2023 are on page 75, the Schedules of Changes in Employers' Total Pension Liability on pages 95-99, the Schedules of the Employer Net Pension Liability on pages 93-94; the Schedule of Changes in Employers' Total Other Post-Employment Benefits (OPEB) Liability are on pages 106-110; and, the Schedule of the Employers' Net OPEB Liabilities are on pages 104-105. These schedules include current and historical trend information about the actuarially funded status of each plan from a long-term, ongoing plan perspective and the progress made in accumulating sufficient assets to pay benefits and insurance premiums when due. The Schedules of the Employers' Contributions – Pensions are on pages 101-103, and the Schedules of the Employers' Contributions – OPEB are on pages 113-115. These schedules present current and historical trend information about the annual required contributions and the contributions made in relation to the requirement. These schedules provide information that contributes to understanding the changes over time in the funded status of the plans.

Kentucky Public Pensions Authority Combined

KPPA's combined fiduciary net position changed by $2,327 million in fiscal year 2023, compared to the fiduciary net position for the previous fiscal year. The increase in fiduciary net position for the fiscal year 2023 is primarily attributable to positive investment performance. This analysis focuses on the net position table and changes in the fiduciary net position table for KPPA's Pension and Insurance Funds.

Management's Discussion & Analysis (Unaudited)

Fiduciary Net Position
As of June 30 ($ in Thousands)

	Pension Plans			Insurance Plans			Total		
	2023	**2022**	**2021**	**2023**	**2022**	**2021**	**2023**	**2022**	**2021**
Cash & Invest.	$17,097,461	$15,418,077	$16,391,137	$7,338,673	$6,766,874	$7,184,408	$24,436,134	$22,184,951	$23,575,545
Receivables	361,735	337,832	361,429	87,154	77,410	122,132	448,889	415,242	483,561
Capital Assets	-	323	677	-	-	-	-	323	677
Total Assets	**17,459,196**	**15,756,232**	**16,753,243**	**7,425,827**	**6,844,284**	**7,306,540**	**24,885,023**	**22,600,516**	**24,059,783**
Total Liabilities	**(519,360)**	**(508,052)**	**(830,553)**	**(194,100)**	**(247,644)**	**(332,927)**	**(713,460)**	**(755,696)**	**(1,163,480)**
Fiduciary Net Position	**$16,939,836**	**$15,248,180**	**$15,922,690**	**$7,231,727**	**$6,596,640**	**$6,973,613**	**$24,171,563**	**$21,844,820**	**$22,896,303**

Capital Assets include capital assets, intangible assets, depreciation and amortization.

Pension Plan Activities

Member contributions increased by $46.6 million. This is primarily due to an increase in covered payroll and an increase in the Employer Pay Credit across all funds. Retirement contributions are calculated by applying a percentage factor to salary and are remitted by each employer on behalf of members. Nonhazardous Tier 1 members pay pension contributions of 5.00% of creditable compensation and Hazardous Tier 1 members contribute 8.00% of creditable compensation; whereas, Nonhazardous Tier 2 and 3 members pay contributions of 6.00% of creditable compensation and Hazardous Tier 2 and 3 members contribute 9% of creditable compensation.

Employer contributions increased by $62.0 million for fiscal year 2023 . The increase in contributions was the result of the increase in covered payroll for all funds, and an increase in the employer contribution rates for CERS Nonhazardous and CERS Hazardous.

Total Pension Plans deductions increased by $56.6 million. The 2.35% increase was primarily driven by the normal increase in retirements across all plans.

Net investment income increased by $2,352.0 million. This is illustrated in the Investment Income Pension table on the next page. The increase in fair value of investments during fiscal year 2023 was the driving force of the increase in net investment income when compared to fiscal year 2022.

Overall, KPPA reported a net positive return of 9.54% for the fiscal year. This outperformed both the IPS policy benchmark return of 8.88% and the actuarial assumed rate of return of 6.25% used by CERS Nonhazardous, CERS Hazardous and KERS Hazardous, and 5.25% used by KERS Nonhazardous and SPRS.

Management's Discussion & Analysis (Unaudited)

Changes in Fiduciary Net Position
For the fiscal year ending June 30 ($ in Thousands)

	Pension Plans			Insurance Plans			Total		
	2023	**2022**	**2021**	**2023**	**2022**	**2021**	**2023**	**2022**	**2021**
Additions:									
Member Cont.	$312,045	$290,471	$274,533	$-	$-	$-	$312,045	$290,471	$274,533
Employer Cont.	1,167,276	1,091,160	1,724,309	194,788	217,318	346,026	1,362,064	1,308,478	2,070,335
Employer Pay Credit	105,738	80,710	68,447	-	-	-	105,738	80,710	68,447
Heath Ins. Cont.	(77)	(208)	(4)	32,378	27,791	24,409	32,301	27,583	24,405
Humana Gain Share	-	-	-	12,308	18,382	42,897	12,308	18,382	42,897
Pension Spiking Cont.	277	122	222	-	-	-	277	122	222
General Fund Appro.	240,000	215,000	384	-	-	-	240,000	215,000	384
Employer Cessation Cont.	-	63,113	175,600	-	2,405	28,400	-	65,518	204,000
Premiums Rec'd	-	-	-	(479)	364	563	(479)	364	563
Retired Reemp Ins.	-	-	-	13,870	12,667	12,535	13,870	12,667	12,535
Medicare Subsidy	-	-	-	4	2	3	4	2	3
AAL Contributions	898,545	912,705	-	87,674	101,637	-	986,219	1,014,342	-
Invest. Inc. (net)	1,435,702	(916,320)	3,150,288	657,211	(372,900)	1,377,531	2,092,913	(1,289,220)	4,527,819
Total Additions	4,159,506	1,736,753	5,393,779	997,754	7,666	1,832,364	5,157,260	1,744,419	7,226,143
Deductions:									
Benefit payments	2,380,090	2,328,594	2,263,388	-	-	-	2,380,090	2,328,594	2,263,388
Refunds	45,885	42,927	32,130	-	-	-	45,885	42,927	32,130
Admin. Exp.	41,875	39,742	36,789	2,427	2,454	2,354	44,302	42,196	39,143
Healthcare Costs	-	-	-	360,240	382,167	381,063	360,240	382,167	381,063
Excise Tax	-	-	-	-	18	-	-	18	-
Total Deductions	2,467,850	2,411,263	2,332,307	362,667	384,639	383,417	2,830,517	2,795,902	2,715,724
Increase (Decrease) in Fiduciary Net Position	**1,691,656**	**(674,510)**	**3,061,472**	**635,087**	**(376,973)**	**1,448,947**	**2,326,743**	**(1,051,483)**	**4,510,419**
Beginning of Period	**15,248,180**	**15,922,690**	**12,861,218**	**6,596,640**	**6,973,613**	**5,524,666**	**21,844,820**	**22,896,303**	**18,385,884**
End of Period	**$16,939,836**	**$15,248,180**	**$15,922,690**	**$7,231,727**	**$6,596,640**	**$6,973,613**	**$24,171,563**	**$21,844,820**	**$22,896,303**

Management's Discussion & Analysis (Unaudited)

CERS

As of June 30 ($ in Thousands)

CERS Nonhazardous Investment Income - Pension	**2023**	**2022**	**2021**
Increase (decrease) in fair value of investments	$633,997	$(1,011,822)	$1,331,722
Investment income net of investment expense	178,004	136,769	135,711
Gain on sale of investments	3,416	374,057	316,798
Total Investment Income(loss) from Investing Activity	**$815,417**	**$(500,996)**	**$1,784,231**
CERS Hazardous Investment Income - Pension	**2023**	**2022**	**2021**
Increase (decrease) in fair value of investments	$220,000	$(350,070)	$447,895
Investment income net of investment expense	62,725	48,654	45,850
Gain on sale of investments	(760)	125,985	106,985
Total Investment Income (loss) from Investing Activity	**$281,965**	**$(175,431)**	**$600,730**

KERS

As of June 30 ($ in Thousands)

KERS Nonhazardous Investment Income - Pension	**2023**	**2022**	**2021**
Increase (decrease) in fair value of investments	$153,469	$(310,014)	$380,850
Investment income net of investment expense	85,482	52,680	50,630
Gain on sale of investments	(18,693)	91,430	96,959
Total Investment Income (loss) from Investing Activity	**$220,258**	**$(165,904)**	**$528,439**
KERS Hazardous Investment Income - Pension	**2023**	**2022**	**2021**
Increase (decrease) in fair value of investments	$58,019	$(102,300)	$129,806
Investment income net of investment expense	20,658	15,111	13,943
Gain on sale of investments	(1,416)	35,348	31,173
Total Investment Income (loss) from Investing Activity	**$77,261**	**$(51,841)**	**$174,922**

SPRS

As of June 30 ($ in Thousands)

Investment Income - Pension	**2023**	**2022**	**2021**
Increase (decrease) in fair value of investments	$29,536	$(39,791)	$45,055
Investment income net of investment expense	15,380	6,347	5,885
Gain on sale of investments	(4,115)	11,296	11,026
Total Investment Income (loss) from Investing Activity	**$40,801**	**$(22,148)**	**$61,966**

Insurance Plan Activities

Employer contributions paid into the Insurance Plans decreased by $36.5 million in fiscal year 2023 over the prior fiscal year. The decrease in employer contributions is directly related to a decrease in the employer contribution rate for the Insurance Plans.

Income from investment activities increased by $1,030.1 million in fiscal year 2023 compared to fiscal year 2022. Overall, KPPA reported a net positive return of 10.15% for the fiscal year. This outperformed both the IPS policy benchmark of 9.27% and the actuarial assumed rate of return of 6.25% used by all of the Insurance Plan Funds.

Management's Discussion & Analysis (Unaudited)

CERS			
As of June 30 ($ in Thousands)			
CERS Nonhazardous Investment Income - Insurance	**2023**	**2022**	**2021**
Increase (decrease) in fair value of investments	$239,418	$(360,292)	$469,201
Investment income net of investment expense	65,959	51,633	41,009
Gain on sale of investments	626	137,960	109,383
Total Investment Income (loss) from Investing Activities	**$306,003**	**$(170,699)**	**$619,593**
CERS Hazardous Investment Income - Insurance	**2023**	**2022**	**2021**
Increase (decrease) in fair value of investments	$114,496	$(177,397)	$245,549
Investment income net of investment expense	32,131	24,818	20,284
Gain on sale of investments	2,112	74,126	56,984
Total Investment Income (loss) from Investing Activities	**$148,739**	**$(78,453)**	**$322,817**
KERS			
KERS Nonhazardous Investment Income - Insurance	**2023**	**2022**	**2021**
Increase (decrease) in fair value of investments	$103,144	$(146,482)	$195,110
Investment income net of investment expense	32,069	20,023	18,478
Gain on sale of investments	(7,161)	40,904	45,007
Total Investment Income (loss) from Investing Activities	**$128,052**	**$(85,555)**	**$258,595**
KERS Hazardous Investment Income - Insurance	**2023**	**2022**	**2021**
Increase (decrease) in fair value of investments	$39,760	$(63,789)	$96,312
Investment income net of investment expense	13,089	9,471	8,372
Gain on sale of investments	142	26,912	21,791
Total Investment Income (loss) from Investing Activities	**$52,991**	**$(27,406)**	**$126,475**
SPRS			
Investment Income - Insurance	**2023**	**2022**	**2021**
Increase (decrease) in fair value of investments	$16,156	$(25,758)	$38,253
Investment income net of investment expense	5,328	3,632	3,060
Gain on sale of investments	(58)	11,339	8,738
Total Investment Income (loss) from Investing Activities	**$21,426**	**$(10,787)**	**$50,051**

Management's Discussion & Analysis (Unaudited)

Historical Trends

Accounting standards require that the Combining Statement of Fiduciary Net Position state asset values at fair value and include benefits and refunds due plan members and beneficiaries; unrealized investment income (loss); and administrative expenses as of the reporting date. Information regarding the actuarial funding status of the Pension and Insurance Funds is provided in the Schedules of Net Pension Liability (NPL) on page 93-94 and Net OPEB Liability on pages 104-105. The asset values stated in the Schedules of Changes in Employers' Total Pension Liability (TPL) on pages 95-99 and Total OPEB Liability on pages 106-110 are the actuarial value of assets. The actuarial value of assets recognizes a portion of the difference between the fair value of assets and the expected fair value of assets based on the investment return assumption. The amount recognized each year is 20% of the difference between fair value and expected fair value. The actuarial accrued liability is calculated using the entry age normal cost funding method. This actuarial accrued liability is the measure of the cost of benefits that have been earned to date by CERS, KERS and SPRS' members, but not yet paid. The difference in value between the actuarial accrued liability and the actuarial value of assets is defined as the unfunded actuarial accrued liability.

The unfunded actuarial accrued liability from the June 30, 2023, actuarial valuation in the Pension Plans decreased by $1,823.0 million for a total unfunded amount of $23,278.5 million in fiscal year 2023, compared to an unfunded amount of $25,101.5 million in fiscal year 2022. The overall decrease in the unfunded actuarial accrued liability is the result of an increase in the fair value of the assets due to favorable market conditions, an increase in employee salaries, and General Fund Appropriations during fiscal year 2023.

The Insurance Plan's unfunded actuarial accrued liability from the June 30, 2023, actuarial valuation for fiscal year 2023, was negative $730.1 million compared to negative $663.0 million for fiscal year 2022. This is a decrease in the unfunded actuarial accrued liability of $67.1 million. The decrease in the unfunded actuarial accrued liability is the result of an increase in the fair value of the assets due to favorable market conditions and an increase in employee salaries during fiscal year 2023. Please see the charts on the following page for the unfunded actuarial accrued liability.

Annual required actuarially determined contributions by the employers and actual contributions made by employers and other contributing entities in relation to the required contributions, are provided in the Schedules of Employer Contributions - Pension on pages 101-103, and in the Schedules of Contributions - OPEB on pages 113-115. The difference in the annual required contributions and actual contributions made by employers and other contributing entities in the KERS and SPRS funds is attributable to the fact that the employer contribution rate set by the Kentucky General Assembly was less than the rate recommended by the KPPA actuary in prior years and adopted by the Board.

Information Requests

This financial report is designed to provide a general overview of the CERS, KERS, SPRS, and Insurance Fund finances. Questions concerning any of the information provided in this report or requests for additional information should be directed to:

ATTN: Director of Accounting
Kentucky Public Pensions Authority
1260 Louisville Road
Frankfort, KY. 40601
(502) 696-8800

Management's Discussion & Analysis (Unaudited)

Schedule of Unfunded Actuarial Accrued Liability CERS
As of June 30 ($ in Millions)

	CERS Nonhazardous				CERS Hazardous			
	Pension		Insurance		Pension		Insurance	
Item	**2023**	**2022**	**2023**	**2022**	**2023**	**2022**	**2023**	**2022**
Actuarial Accrued Liability (AAL)	$15,296	$15,674	$2,560	$2,392	$5,850	$5,862	$1,604	$1,538
Actuarial Value of Assets	8,585	8,149	3,366	3,160	3,008	2,789	1,615	1,554
Unfunded AAL	**$6,711**	**$7,525**	**$(806)**	**$(768)**	**$2,842**	**$3,073**	**$(11)**	**$(16)**
Funded Ratio	56.12%	51.99%	131.48%	132.11%	51.42%	47.58%	100.70%	101.02%

Schedule of Unfunded Actuarial Accrued Liability KRS
As of June 30 ($ in Millions)

	KERS Nonhazardous				KERS Hazardous				SPRS			
	Pension		Insurance		Pension		Insurance		Pension		Insurance	
Item	**2023**	**2022**	**2023**	**2022**	**2023**	**2022**	**2023**	**2022**	**2023**	**2022**	**2023**	**2022**
Actuarial Accrued Liability (AAL)	$16,304	$16,576	$1,877	$1,782	$1,363	$1,316	$364	$347	$1,092	$1,067	$244	$233
Actuarial Value of Assets	3,552	3,065	1,533	1,409	891	832	620	598	590	560	245	234
Unfunded AAL	**$12,752**	**$13,511**	**$344**	**$373**	**$472**	**$484**	**$(256)**	**$(251)**	**$502**	**$507**	**$(1)**	**$(1)**
Funded Ratio	21.79%	18.49%	81.66%	79.08%	65.40%	63.22%	170.43%	172.23%	54.03%	52.46%	100.46%	100.62%

Combining Statement of Fiduciary Net Position - Pension

As of June 30, 2023, with Comparative Totals as of June 30, 2022 ($ in Thousands)

ASSETS	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS	Pension Total 2023	Pension Total 2022
CASH AND SHORT-TERM INVESTMENTS							
Cash Deposits	$662	$262	$375	$141	$35	$1,475	$367
Short-term Investments	303,178	134,692	648,780	89,143	133,780	1,309,573	1,116,933
Total Cash and Short-term Investments	**303,840**	**134,954**	**649,155**	**89,284**	**133,815**	**1,311,048**	**1,117,300**
RECEIVABLES							
Accounts Receivable	92,043	50,052	87,362	4,216	5,340	239,013	255,799
Accounts Receivable - Investments	58,587	20,435	31,172	6,728	5,800	122,722	82,033
Total Receivables	**150,630**	**70,487**	**118,534**	**10,944**	**11,140**	**361,735**	**337,832**
INVESTMENTS, AT FAIR VALUE							
Core Fixed Income	862,405	299,149	708,383	106,016	118,419	2,094,372	2,030,334
Public Equities	4,327,129	1,494,663	1,169,731	389,000	190,147	7,570,670	6,193,221
Private Equities	689,017	229,764	159,836	63,179	16,596	1,158,392	1,289,931
Specialty Credit	1,717,669	591,592	604,758	179,012	99,764	3,192,795	3,097,829
Derivatives	(2,478)	(862)	(2,045)	(306)	(342)	(6,033)	(2,864)
Real Return	268,971	89,758	72,726	24,325	10,693	466,473	417,816
Real Estate	545,935	173,707	179,034	50,564	21,466	970,706	882,759
Total Investments, at Fair Value	**8,408,648**	**2,877,771**	**2,892,423**	**811,790**	**456,743**	**15,447,375**	**13,909,026**
Securities Lending Collateral Invested	176,126	60,803	71,804	18,277	12,028	339,038	391,751
CAPITAL/INTANGIBLE ASSETS							
Capital Assets	1,701	153	929	91	11	2,885	2,885
Intangible Assets	9,961	827	5,920	494	100	17,302	17,300
Accumulated Depreciation	(1,701)	(153)	(929)	(91)	(11)	(2,885)	(2,885)
Accumulated Amortization	(9,961)	(827)	(5,920)	(494)	(100)	(17,302)	(16,977)
Total Capital Assets	**-**	**-**	**-**	**-**	**-**	**-**	**323**
Total Assets	**9,039,244**	**3,144,015**	**3,731,916**	**930,295**	**613,726**	**17,459,196**	**15,756,232**
LIABILITIES							
Accounts Payable	5,091	815	2,566	599	56	9,127	7,048
Investment Accounts Payable	76,587	26,600	50,340	8,852	8,816	171,195	109,253
Securities Lending Collateral	176,126	60,803	71,804	18,277	12,028	339,038	391,751
Total Liabilities	**257,804**	**88,218**	**124,710**	**27,728**	**20,900**	**519,360**	**508,052**
Total Fiduciary Net Position Restricted for Pension Benefits	**$8,781,440**	**$3,055,797**	**$3,607,206**	**$902,567**	**$592,826**	**$16,939,836**	**$15,248,180**

See accompanying notes which are an integral part of these combining financial statements.

Note: The displayed fair values include investable assets held by each System and its associated contributions, payables, equipment and intangible assets; unlike those found in the Investment Section, which include only those investable assets held by each System.

Combining Statement of Changes In Fiduciary Net Position - Pension

For the fiscal year ending June 30, 2023, with Comparative Totals as of June 30, 2022 ($ in Thousands)

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS	Pension Total 2023	PensionTotal 2022
ADDITIONS							
Member Contributions	$147,769	$56,988	$84,579	$17,459	$5,250	$312,045	$290,471
Employer Contributions	645,940	286,353	114,427	64,020	56,536	1,167,276	1,091,160
Employer Pay Credit	51,694	21,683	22,018	8,758	1,585	105,738	80,710
Actuarially Accrued Liability Contributions	-	-	898,545	-	-	898,545	912,705
General Fund Appropriations	-	-	240,000	-	-	240,000	215,000
Pension Spiking Contributions	46	186	16	29	-	277	122
Health Insurance Contributions (HB1)	(30)	(20)	(12)	(7)	(8)	(77)	(208)
Employer Cessation Contributions	-	-	-	-	-	-	63,113
Total Contributions	**845,419**	**365,190**	**1,359,573**	**90,259**	**63,363**	**2,723,804**	**2,653,073**
INVESTMENT INCOME							
From Investing Activities							
Net Appreciation (Depreciation) in FV of Investments	637,413	219,240	134,776	56,603	25,421	1,073,453	(1,175,881)
Interest/Dividends	239,709	83,235	102,220	26,388	17,889	469,441	429,376
Total Investing Activities Income (loss)	877,122	302,475	236,996	82,991	43,310	1,542,894	(746,505)
Less: Investment Expense	52,170	17,541	15,206	4,915	2,227	92,059	75,187
Less: Performance Fees	10,465	3,295	1,866	910	336	16,872	96,462
Net Income (loss) from Investing Activities	814,487	281,639	219,924	77,166	40,747	1,433,963	(918,154)
From Securities Lending Activities							
Securities Lending Income	8,998	3,143	2,918	867	489	16,415	1,652
Less: Securities Lending Borrower Rebates (Income)/ Expense	7,904	2,760	2,525	755	426	14,370	(505)
Less: Securities Lending Agent Fees	164	57	59	17	9	306	323
Net Income from Securities Lending	930	326	334	95	54	1,739	1,834
Net Investment Income (loss)	**815,417**	**281,965**	**220,258**	**77,261**	**40,801**	**1,435,702**	**(916,320)**
Total Additions	**1,660,836**	**647,155**	**1,579,831**	**167,520**	**104,164**	**4,159,506**	**1,736,753**
DEDUCTIONS							
Benefit Payments	894,351	319,594	1,023,704	78,636	63,805	2,380,090	2,328,594
Refunds	23,263	6,568	11,847	4,041	166	45,885	42,927
Administrative Expenses	24,128	2,124	13,817	1,513	293	41,875	39,742
Total Deductions	**941,742**	**328,286**	**1,049,368**	**84,190**	**64,264**	**2,467,850**	**2,411,263**
Net Increase (Decrease) in Fiduciary Net Position Restricted for Pension Benefits	719,094	318,869	530,463	83,330	39,900	1,691,656	(674,510)
Total Fiduciary Net Position Restricted for Pension Benefits							
Beginning of Period	**8,062,346**	**2,736,928**	**3,076,743**	**819,237**	**552,926**	**15,248,180**	**15,922,690**
End of Period	**$8,781,440**	**$3,055,797**	**$3,607,206**	**$902,567**	**$592,826**	**$16,939,836**	**$15,248,180**

See accompanying notes, which are an integral part of these combining financial statements.

Combining Statement of Fiduciary Net Position - Insurance

As of June 30, 2023, with Comparative Totals as of June 30, 2022 ($ in Thousands)

ASSETS	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS	Insurance Total 2023	Insurance Total 2022
CASH AND SHORT-TERM INVESTMENTS							
Cash Deposits	$259	$8	$105	$9	$8	$389	$255
Short-term Investments	132,269	31,789	170,091	29,906	10,868	374,923	431,687
Total Cash and Short-term Investments	**132,528**	**31,797**	**170,196**	**29,915**	**10,876**	**375,312**	**431,942**
RECEIVABLES							
Accounts Receivable	14,558	7,560	13,244	334	956	36,652	39,915
Investment Accounts Receivable	22,443	10,253	11,749	4,294	1,763	50,502	37,495
Total Receivables	**37,001**	**17,813**	**24,993**	**4,628**	**2,719**	**87,154**	**77,410**
INVESTMENTS, AT FAIR VALUE							
Core Fixed Income	327,065	148,991	171,536	72,740	27,887	748,219	753,513
Public Equities	1,633,030	807,897	637,103	268,599	108,362	3,454,991	2,871,633
Specialty Credit	641,632	318,176	289,421	129,503	51,505	1,430,237	1,401,886
Private Equities	268,195	150,750	94,390	53,885	23,922	591,142	625,455
Derivatives	(908)	(412)	(478)	(200)	(78)	(2,076)	(934)
Real Return	82,403	43,561	31,681	17,472	6,563	181,680	164,241
Real Estate	196,683	107,912	60,926	45,368	17,319	428,208	372,994
Total Investments, at Fair Value	**3,148,100**	**1,576,875**	**1,284,579**	**587,367**	**235,480**	**6,832,401**	**6,188,788**
Securities Lending Cash Collateral Invested	59,513	29,266	26,420	11,270	4,491	130,960	146,144
Total Assets	**3,377,142**	**1,655,751**	**1,506,188**	**633,180**	**253,566**	**7,425,827**	**6,844,284**
LIABILITIES							
Accounts Payable	223	22	118	-	1	364	57,501
Investment Accounts Payable	27,873	12,877	14,161	5,588	2,277	62,776	43,999
Securities Lending Cash Collateral	59,513	29,266	26,420	11,270	4,491	130,960	146,144
Total Liabilities	**87,609**	**42,165**	**40,699**	**16,858**	**6,769**	**194,100**	**247,644**
Total Fiduciary Net Position Restricted for OPEB	**$3,289,533**	**$1,613,586**	**$1,465,489**	**$616,322**	**$246,797**	**$7,231,727**	**$6,596,640**

See accompanying notes, which are an integral part of these combining financial statements.

Note: The displayed fair values include investable assets held by each System and its associated contributions, payables, equipment and intangible assets; unlike those found in the Investment Section, which include only those investable assets held by each System.

Combining Statement of Changes In Fiduciary Net Position - Insurance

For the fiscal year ending June 30, 2023, with Comparative Totals as of June 30, 2022 ($ in Thousands)

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS	Insurance Total 2023	Insurance Total 2022
ADDITIONS							
Employer Contributions	$101,121	$48,792	$35,549	$37	$9,289	$194,788	$217,318
Actuarially Accrued Liability Contributions	-	-	87,674	-	-	87,674	101,637
Medicare Drug Reimbursement	-	-	4	-	-	4	2
Insurance Premiums	294	(546)	(27)	(69)	(131)	(479)	364
Humana Gain Share Payment	5,951	914	4,851	368	224	12,308	18,382
Retired Reemployed Healthcare	4,922	1,611	5,885	1,452	-	13,870	12,667
Health Insurance Contributions (HB1)	17,782	4,278	8,370	1,592	356	32,378	27,791
Employer Cessation Contributions	-	-	-	-	-	-	2,405
Total Contributions	**130,070**	**55,049**	**142,306**	**3,380**	**9,738**	**340,543**	**380,566**
INVESTMENT INCOME							
From Investing Activities							
Net Appreciation (Depreciation) in FV of Investments	240,044	116,608	95,983	39,902	16,098	508,635	(482,477)
Interest/Dividends	88,629	43,939	42,258	17,802	7,164	199,792	192,803
Total Investing Activities Income (loss)	328,673	160,547	138,241	57,704	23,262	708,427	(289,674)
Less: Investment Expense	19,478	10,174	7,451	3,946	1,559	42,608	34,478
Less: Performance Fees	3,499	1,782	2,870	819	299	9,269	49,494
Net Income (loss) from Investing Activities	305,696	148,591	127,920	52,939	21,404	656,550	(373,646)
From Securities Lending Activities							
Securities Lending Income	2,775	1,336	1,124	460	195	5,890	679
Less: Securities Lending Borrower Rebates (Income)/ Expense	2,414	1,162	969	399	169	5,113	(199)
Less: Securities Lending Agent Fees	54	26	23	9	4	116	132
Net Income (loss) from Securities Lending	307	148	132	52	22	661	746
Net Investment Income (loss)	**306,003**	**148,739**	**128,052**	**52,991**	**21,426**	**657,211**	**(372,900)**
Total Additions	**436,073**	**203,788**	**270,358**	**56,371**	**31,164**	**997,754**	**7,666**
DEDUCTIONS							
Healthcare Premiums Subsidies	123,587	93,485	103,952	19,748	14,290	355,062	377,014
Administrative Expenses	937	522	771	123	74	2,427	2,454
Self-Funded Healthcare Costs	3,240	172	1,668	80	18	5,178	5,153
Excise Tax Insurance	-	-	-	-	-	-	18
Total Deductions	**127,764**	**94,179**	**106,391**	**19,951**	**14,382**	**362,667**	**384,639**
Net Increase (Decrease) in Fiduciary Net Position Restricted for OPEB	308,309	109,609	163,967	36,420	16,782	635,087	(376,973)
Total Fiduciary Net Position Restricted for OPEB							
Beginning of Period	**2,981,224**	**1,503,977**	**1,301,522**	**579,902**	**230,015**	**6,596,640**	**6,973,613**
End of Period	**$3,289,533**	**$1,613,586**	**$1,465,489**	**$616,322**	**$246,797**	**$7,231,727**	**$6,596,640**

See accompanying notes, which are an integral part of these combining financial statements.

Combining Statement of Fiduciary Net Position

As of June 30, 2023 with Comparative Totals as of June 30, 2022 ($ in Thousands)

ASSETS	Pension	Insurance	KPPA Total 2023	KPPA Total 2022
CASH AND SHORT-TERM INVESTMENTS				
Cash Deposits	$1,475	$389	$1,864	$622
Short-term Investments	1,309,573	374,923	1,684,496	1,548,620
Total Cash and Short-term Investments	**1,311,048**	**375,312**	**1,686,360**	**1,549,242**
RECEIVABLES				
Accounts Receivable	239,013	36,652	275,665	295,714
Accounts Receivable - Investments	122,722	50,502	173,224	119,528
Total Receivables	**361,735**	**87,154**	**448,889**	**415,242**
INVESTMENTS, AT FAIR VALUE				
Core Fixed Income	2,094,372	748,219	2,842,591	2,783,847
Public Equities	7,570,670	3,454,991	11,025,661	9,064,854
Private Equities	1,158,392	591,142	1,749,534	1,915,386
Specialty Credit	3,192,795	1,430,237	4,623,032	4,499,715
Derivatives	(6,033)	(2,076)	(8,109)	(3,798)
Real Return	466,473	181,680	648,153	582,057
Real Estate	970,706	428,208	1,398,914	1,255,753
Total Investments, at Fair Value	**15,447,375**	**6,832,401**	**22,279,776**	**20,097,814**
Securities Lending Cash Collateral Invested	339,038	130,960	469,998	537,895
CAPITAL/INTANGIBLE ASSETS				
Capital Assets	2,885	-	2,885	2,885
Intangible Assets	17,302	-	17,302	17,300
Accumulated Depreciation	(2,885)	-	(2,885)	(2,885)
Accumulated Amortization	(17,302)	-	(17,302)	(16,977)
Total Capital Assets	**-**	**-**	**-**	**323**
Total Assets	**17,459,196**	**7,425,827**	**24,885,023**	**22,600,516**
LIABILITIES				
Accounts Payable	9,127	364	9,491	64,549
Investment Accounts Payable	171,195	62,776	233,971	153,252
Securities Lending Cash Collateral	339,038	130,960	469,998	537,895
Total Liabilities	**519,360**	**194,100**	**713,460**	**755,696**
Total Fiduciary Net Position Restricted for Benefits	**$16,939,836**	**$7,231,727**	**$24,171,563**	**$21,844,820**

See accompanying notes which are an integral part of these combining financial statements.

Note: The displayed fair values include investable assets held by each System and its associated contributions, payables, equipment and intangible assets; unlike those found in the Investment Section, which include only those investable assets held by each System.

Combining Statement of Changes In Fiduciary Net Position

For the fiscal year ending June 30, 2023, with Comparative Totals as of June 30, 2022 ($ in Thousands)

	Pension	Insurance	KPPA Total 2023	KPPA Total 2022
ADDITIONS				
Member Contributions	$312,045	$-	$312,045	$290,471
Employer Contributions	1,167,276	194,788	1,362,064	1,308,478
Employer Pay Credit	105,738	-	105,738	80,710
Actuarially Accrued Liability Contributions	898,545	87,674	986,219	1,014,342
Medicare Drug Reimbursement	-	4	4	2
Insurance Premiums	-	(479)	(479)	364
Humana Gain Share	-	12,308	12,308	18,382
General Fund Appropriations	240,000	-	240,000	215,000
Pension Spiking Contributions	277	-	277	122
Retired Reemployed Healthcare	-	13,870	13,870	12,667
Health Insurance Contributions (HB1)	(77)	32,378	32,301	27,583
Employer Cessation Contributions	-	-	-	65,518
Total Contributions	**2,723,804**	**340,543**	**3,064,347**	**3,033,639**
INVESTMENT INCOME				
From Investing Activities				
Net Appreciation (Depreciation) in FV of Investments	1,073,453	508,635	1,582,088	(1,658,358)
Interest/Dividends	469,441	199,792	669,233	622,179
Total Investing Activities Income (loss)	1,542,894	708,427	2,251,321	(1,036,179)
Less: Investment Expense	92,059	42,608	134,667	109,665
Less: Performance Fees	16,872	9,269	26,141	145,956
Net Income (loss) from Investing Activities	1,433,963	656,550	2,090,513	(1,291,800)
Securities Lending Income	16,415	5,890	22,305	2,331
Less: Securities Lending Borrower Rebates (Income)/Expense	14,370	5,113	19,483	(704)
Less: Securities Lending Agent Fees	306	116	422	455
Net Income from Securities Lending	1,739	661	2,400	2,580
Net Investment Income/Loss	**1,435,702**	**657,211**	**2,092,913**	**(1,289,220)**
Total Additions	**4,159,506**	**997,754**	**5,157,260**	**1,744,419**
DEDUCTIONS				
Benefit Payments	2,380,090	-	2,380,090	2,328,594
Refunds	45,885	-	45,885	42,927
Healthcare Premiums Subsidies	-	355,062	355,062	377,014
Self Funded Healthcare Costs	-	5,178	5,178	5,153
Administrative Expenses	41,875	2,427	44,302	42,196
Excise Tax Insurance	-	-	-	18
Total Deductions	**2,467,850**	**362,667**	**2,830,517**	**2,795,902**
Net Increase (Decrease) in Fiduciary Net Position Restricted for Benefits	1,691,656	635,087	2,326,743	(1,051,483)
Total Fiduciary Net Position Restricted for Benefits				
Beginning of Period	**15,248,180**	**6,596,640**	**21,844,820**	**22,896,303**
End of Period	**$16,939,836**	**$7,231,727**	**$24,171,563**	**$21,844,820**

See accompanying notes, which are an integral part of these combining financial statements.

NOTE A. Summary of Significant Accounting Policies

Kentucky Retirement Systems (KRS) is responsible for the administration of the Kentucky Employees Retirement System (KERS) and the State Police Retirement System (SPRS). HB 484, passed in the 2020 Legislative Session, also created a separate governing board in Kentucky Revised Statutes 78.782, County Employees Retirement System (CERS), to administer the statewide cost-sharing plans for local government employers. KPPA is responsible for administering the single personnel system for the pension plans, a system of accounting, day-to-day administrative needs of CERS and KRS, selecting consulting and service contractors to provide administrative services including an external auditor. KPPA is also responsible for promulgating administrative regulations on behalf of KRS and CERS, individually or collectively. It is additionally tasked with administering and operating any jointly held assets for KRS and CERS including, but not limited to real estate, office space, equipment, and supplies. KPPA staff manages assets in accordance with investment policies developed by the CERS and KRS Investment Committees and approved by each Board. KPPA staff recommends to the Boards the hiring, retention and termination of investment managers. Each Board is responsible for selection of investment services for the management and custody of the assets while KPPA is responsible for the remaining investment services.

This summary of KPPA's significant accounting policies is presented to assist in understanding the combining financial statements for CERS and KRS. The combining financial statements and notes are representations of KPPA's management, which is responsible for their integrity and objectivity. These accounting policies conform to Generally Accepted Accounting Principles (GAAP) and have been consistently applied in the preparation of the combining financial statements.

Basis of Accounting

KPPA's combining financial statements are prepared using the accrual basis of accounting. Plan member contributions are recognized in the period in which contributions are due. Employer contributions to the plan are recognized when due and the employer has made a formal commitment to provide the contributions. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan. Premium payments are recognized when due and payable in accordance with the insurance terms of the plan. Administrative and investment expenses are recognized when incurred. The net position represents the five funds of CERS, KERS, SPRS and the five funds of the Kentucky Retirement Insurance Trust Fund (Insurance Fund) that have accumulated thus far to pay pension benefits for retirees, active and inactive members, and health care premiums for current and future employees.

Method Used to Value Investments

Investments are reported at fair value. Fair value is the price that would be received upon selling an asset or the amount paid to transfer a liability in an orderly transaction between market participants at the measurement date. Short-term investments are reported at cost, which approximates fair value. See Investments Note D for further discussion of fair value measurements. Purchases and sales of securities are recorded on a trade-date basis. Interest income is recorded on the accrual basis. Dividends are recorded on the dividend date. Gain (loss) on investments includes gains and losses on investments bought and sold as well as held during the fiscal year. Investment returns are recorded in all plans net of investment fees.

Investment Unitization

Within the plan accounting structure there are two primary types of accounts: Plan Accounts and Pool Accounts. Plan Accounts are the owners of the investment pool. An account is established for each plan/fund and these accounts hold Units of Participation that represent the plan's/fund's invested value of the investment pool. Pool Accounts are accounts that hold the assets of the investment pool where all investment related activity and earnings occur. The pooled accounts are the investment strategies of the pool. Units of Participation are bought and sold as each plan/fund contributes or withdraws cash or assets from the investment pool. The investment pool earnings are then allocated to plans utilizing a cost distribution method that allows for fluctuating prices experienced in capital markets. This involves earnings allocated to the plan accounts with an increase or decrease in cost on the Unit of Participation Holdings of the Plan Accounts. Correspondingly, the price of the Unit of Participation Holdings is updated to reflect change in fair value in the investment pool. Earnings are allocated based on the daily weighted average of Master Trust Units held by each plan/fund account during each monthly earnings period. This method is commonly used when plans make multiple contributions or withdrawals from the investment pool throughout the month as it eliminates allocation distortion due to large end of month cash flows.

Estimates

The preparation of financial statements in accordance with GAAP requires management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

Equipment

Office equipment is valued at historical cost and depreciation is computed utilizing the straight-line method over the estimated useful lives of the assets ranging from three to ten years. Improvements, which increase the useful life of the equipment, are capitalized. Maintenance and repairs are charged as an expense when incurred. The capitalization threshold used in fiscal year 2023 was $3,000 (see Equipment Note J for further information).

Intangible Assets

Intangible assets, currently computer software, are valued at historical cost and amortization is computed utilizing the straight-line method over the estimated useful lives of the assets which is ten years. The capitalization threshold used in fiscal year 2023 was $3,000 (see Intangible Assets Note K for further information).

Accounts Receivable

Accounts Receivable consist of amounts due from employers. KPPA management considers accounts receivable to be fully collectible; accordingly, no allowance for doubtful accounts is considered necessary. If amounts become uncollectible, they will be charged to operations when that determination is made. If amounts previously written off are collected, they will be credited to income when received.

The Investment Accounts Receivable and Investment Accounts Payable consist of investment management earnings and fee accruals, as well as all buys and sells of securities which have not closed as of the reporting date.

Payment of Benefits

Benefits are recorded when paid.

Expense Allocation

KPPA administrative expenses are allocated based on a hybrid allocation developed by the Boards. The hybrid allocation is based on a combination of plan membership and direct plan expenses. All investment related expenses are allocated in proportion to the percentage of investment assets held by each plan.

Component Unit

KPPA is a component unit of the Commonwealth of Kentucky (the Commonwealth) for financial reporting purposes.

CERS was created by the Kentucky General Assembly on July 1, 1958, pursuant to Kentucky Revised Statutes 78.520, and the separate governing board was created in 2021. KERS was created by the Kentucky General Assembly on July 1, 1956, pursuant to Kentucky Revised Statutes 61.515. SPRS was created by the Kentucky General Assembly on July 1, 1958, pursuant to Kentucky Revised Statutes 16.510. The KRS Insurance Trust Fund was created by the Kentucky General Assembly pursuant to Kentucky Revised Statutes 61.701. KPPA's administrative budget is subject to approval by the Kentucky General Assembly. Employer contribution rates for KERS and SPRS are also subject to legislative approval. Employer contribution rates for CERS are determined by the Board of CERS without further legislative review. The methods used to determine the employer rates for CERS and KRS (KERS and SPRS) are specified in Kentucky Revised Statutes 78.635 and 61.565. Employee contribution rates are set by statute and may be changed only by the Kentucky General Assembly.

Perimeter Park West, Incorporated (PPW) is governed by a three-member board selected by shareholders. Although it is legally separate from KPPA, PPW is reported as part of KPPA, because its sole ownership is Kentucky Retirement Systems, and therefore through unitization is owned by KERS, CERS, and SPRS. PPW functions as a real estate holding company for the offices used by the plans administered by KPPA.

Recent Accounting Pronouncements

In June 2017, the Governmental Accounting Standards Board (GASB) issued *Statement Number 87 Leases*. The objective of this Statement is to address government lessee's recognition of lease liabilities, intangible assets, and report amortization expense for using the leased asset, interest expense on the lease liability, and note disclosures about the lease. Another objective of this Statement is to address government lessor's recognition of a lease receivable, deferred inflow, and report lease revenue, interest income, and note disclosures about the lease. Due to COVID-19, *Statement Number 87 Leases* was updated by GASB to extend the requirement of this standard to take effect for financial statements starting with the fiscal year that ends June 30, 2022. KPPA determined that the KPPA lease agreements are not material to the overall financial statements. Therefore, KPPA did not report the leases according to *Statement Number 87 Leases*.

GASB *Statement Number 96, Subscription-Based Information Technology Arrangements (SBITAs)* established standards of accounting and financial reporting for SBITAs by a government end user (a government). The requirements of this Statement apply to financial statements of all state and local governments. The underlying accounting principles for SBITAs are similar to the standards established in *Statement Number 87, Leases*, as amended. The requirements of this Statement will take effect for financial statements starting with the fiscal year that ends June 30, 2023. KPPA determined that the KPPA SBITAs lease agreements are not material to the overall financial statements. Therefore, KPPA did not report the SBITAs leases according to Statement Number 96 SBITAs.

GASB Statement Number 100, Accounting Changes and Error Corrections - an amendment of *GASB Statement No. 62.* The requirements of this Statement will take effect for financial statements starting with the fiscal year that ends June 30, 2024. KPPA is evaluating the impact of the Statement to the financial report.

GASB Statement Number 101, Compensated Absences. The requirements of the Statement will take effect for financial statements starting with the fiscal year that ends December 31, 2024. KPPA is evaluating the impact of the Statement to the financial report.

Note B. Descriptions & Contribution Information

CERS Membership Combined
As of June 30

	2023		
Members	**Nonhazardous**	**Hazardous**	**Total**
Retirees and Beneficiaries Receiving Benefits	66,935	9,448	76,383
Inactive Memberships	106,903	3,687	110,590
Active Members	81,217	9,181	90,398
Total	**255,055**	**22,316**	**277,371**
Number of Participating Employers			1,120

KERS Membership Combined
As of June 30

	2023		
Members	**Nonhazardous**	**Hazardous**	**Total**
Retirees and Beneficiaries Receiving Benefits	44,975	3,459	48,434
Inactive Memberships	51,001	7,222	58,223
Active Members	30,854	3,875	34,729
Total	**126,830**	**14,556**	**141,386**
Number of Participating Employers			333

SPRS Membership
As of June 30

	2023		
Members	**Nonhazardous**	**Hazardous**	**Total**
Retirees and Beneficiaries Receiving Benefits	-	1,552	1,552
Inactive Memberships	-	432	432
Active Members	-	868	868
Total	**-**	**2,852**	**2,852**
Number of Participating Employers			1

Note: Each person is only counted once in the Membership by System report. A member who has both a membership account and a retired account is included in the retired count. Members who have multiple membership accounts are included under the system where they most recently contributed. Members who have more than one retirement account are included in the system with the greatest service credit. If the retired accounts have equal service credit, they are counted first in SPRS, CERS Hazardous, KERS Hazardous, CERS Nonhazardous, then KERS Nonhazardous.

Retiree Medical Insurance Coverage
As of June 30, 2023

	Single	Couple/ Family	Parent	Medicare Without Prescription	Medicare With Prescription
CERS Nonhazardous	8,721	524	234	1,921	29,542
CERS Hazardous	1,893	3,047	491	138	4,455
CERS Total	**10,614**	**3,571**	**725**	**2,059**	**33,997**
KERS Nonhazardous	6,693	553	433	957	22,976
KERS Hazardous	653	470	118	72	1,796
KERS Total	**7,346**	**1,023**	**551**	**1,029**	**24,772**
SPRS	230	434	92	17	1,022
Total	**18,190**	**5,028**	**1,368**	**3,105**	**59,791**

The total number of Participating Employers is 1,454.

Note: Medical Insurance coverage is provided based on the member's initial participation date and length of service. Members receive either a percentage or dollar amount for insurance coverage. The counts are the number of medical plans contracted with the Department of Employee Insurance or Medicare vendor and are not representative of the number of persons.

Plan Descriptions

The County Employees Retirement System (CERS), the Kentucky Employees Retirement System (KERS), and the State Police Retirement System (SPRS) provide retirement, disability, and death benefits to system members. Retirement benefits may be extended to beneficiaries of members under certain circumstances. KPPA provides administrative support to CERS, KERS, SPRS, and Kentucky Retirement System Insurance Trust Fund (Insurance Fund). In addition to executive management, the CERS, KERS, SPRS, and Insurance Fund share investment management, accounting, and information system services, the costs of which are allocated to the plans on an equitable basis.

CERS - County Employees Retirement System

CERS was established by Kentucky Revised Statutes 78.520. The CERS system is comprised of two plans - CERS Nonhazardous plan and CERS Hazardous plan. The CERS Nonhazardous plan was established to provide retirement benefits to all regular full-time members employed in positions of each participating county, city, school board, and any additional eligible local agencies electing to participate in CERS. The membership of the CERS Hazardous plan includes employees whose position is considered hazardous with principal job duties including, but are not limited to, active law enforcement, probation and parole officers, detectives, pilots, paramedics, and emergency medical technicians, with duties that require frequent exposure to a high degree of danger and also require a high degree of physical condition.

The responsibility for the general administration and operation of the plans within CERS is vested in the CERS Board of Trustees. The CERS Board of Trustees consists of 9 members. Six trustees are appointed by the governor and three are elected by CERS members (active, inactive, and/or retired). The six appointed trustees are selected from a list of candidates provided to the Governor’s Office by one of three employer advocacy groups: Kentucky League of Cities, Kentucky Association of Counties, or Kentucky School Board Association. Of the six appointed trustees, three must have investment experience and three must have retirement experience as defined by statute. All appointments by the governor are subject to Senate confirmation.

KERS - Kentucky Employees Retirement System

KERS was established by Kentucky Revised Statutes 61.515. The KERS system is comprised of two plans - KERS Nonhazardous plan and KERS Hazardous plan. The KERS Nonhazardous plan was established to provide retirement benefits to all regular full-time members employed in positions of any state department, board, or agency directed by Executive Order to participate in KERS. The membership of the KERS Hazardous plan includes employees whose position is considered hazardous with principal job duties including, but are not limited to, active law enforcement, probation and parole officer, detective, pilots, paramedics, and emergency medical technicians, with duties that require frequent exposure to a high degree of danger and also require a high degree of physical condition.

The responsibility for the general administration and operation of KERS is vested with the Kentucky Retirement Systems (KRS) Board of Trustees. The KRS Board of Trustees consist of 9 members. Six trustees are appointed by the governor and three are elected. Of the elected trustees, two are elected by KERS members and one is elected by SPRS members. Active, inactive and retired members of the appropriate system are invited to participate in the election of trustees. Of the six appointed trustees, three must have investment experience and three must have retirement experience as defined by statute. All appointments by the governor are subject to Senate confirmation. The two trustees elected by the KERS membership must be members of or retired from KERS. The one trustee elected by the SPRS membership must be a member of or retired from SPRS.

SPRS - State Police Retirement System

SPRS is a single employer defined benefit pension plan and was established by Kentucky Revised Statutes 16.510 to provide retirement benefits to all full-time state troopers employed in positions by the Kentucky State Police. The responsibility for the general administration and operation of the SPRS is vested with the KRS Board of Trustees (see KERS - Kentucky Employees Retirement System for KRS Board composition).

Kentucky Retirement System Insurance Trust Fund

The Insurance Fund was established by Kentucky Revised Statutes 61.701 for the purpose of providing hospital and medical insurance benefits for eligible members receiving benefits from CERS Nonhazardous, CERS Hazardous, KERS Nonhazardous, KERS Hazardous, and SPRS (collectively the Insurance Fund). The responsibility for the general administration and operation of the Insurance Fund is vested with both the CERS Board of Trustees and the KRS Boards of Trustees. Each of the OPEB funds: CERS Nonhazardous, CERS Hazardous, KERS Nonhazardous, KERS Hazardous, and SPRS is legally separated with benefits only eligibility to be paid for each of the respective membership groups.

Cost of Living Adjustment (COLA)

Prior to July 1, 2009, COLAs were provided to retirees annually equal to the percentage increase in the annual average of the consumer price index (CPI) for all urban consumers for the most recent calendar year, not to exceed 5% in any plan year. After July 1, 2009, the COLAs were to be limited to 1.50%.

In 2013 the General Assembly created a new law to govern how COLAs will be granted. Language included in Senate Bill 2 during the 2013 Regular Session states COLAs will only be granted in the future if the Systems' Boards determine that assets of the Systems are greater than 100% of the actuarial liabilities and legislation authorizes the use of surplus funds for the COLA; or the General Assembly fully prefunds the COLA or directs the payment of funds in the year the COLA is provided. Kentucky Revised Statutes 78.5518 governs how COLAs may be granted for members of CERS. The granting of COLAs for the KERS and SPRS membership is covered under Kentucky Revised Statutes 61.691.

No COLA has been granted since July 1, 2011.

Employer Contributions

Local government participating employers are required to contribute an actuarially determined rate for CERS pension contributions, per the Kentucky Revised Statutes 78.635. The CERS Board of Trustees establishes the employer contribution rate based on Kentucky Revised Statutes 78.454(33) each year following the annual actuarial valuation as of July 1 and prior to July 1 of the succeeding fiscal year for local governments in Kentucky.

The Commonwealth is required to contribute at an actuarially determined rate for KERS and SPRS pensions. The KRS Board of Trustees recommends the rates each year following the annual actuarial valuation, but the rates are set by the legislature within the budget bill for each biennium. The contribution rates from July 1, 2022, through June 30, 2023, were set within HB 1, passed in the 2022 Regular Legislative Session, for KERS Nonhazardous, KERS Hazardous and SPRS employers.

The KERS Nonhazardous employer contribution rate shall include, (1) the normal cost contribution and (2) the prorated amount of the actuarially accrued liability assigned to each individual nonhazardous employer in accordance with Kentucky Revised Statutes 61.565(1)(d). Each employer pays the normal cost as a percentage of reported payroll plus a flat amount to cover the employer-specific actuarially accrued liability contribution for the fiscal year as determined by the annual valuation.

Per Kentucky Revised Statutes 61.565 and 16.645(18), normal contribution and past service contribution rates shall be determined by the KRS Board on the basis of the last annual valuation preceding July 1 of a new biennium. The KRS Board may amend contribution rates as of the first day of July of the second year of a biennium, if it is determined on the basis of a subsequent actuarial valuation that amended contribution rates are necessary to satisfy requirements determined in accordance with actuarial bases adopted by the KRS Board. However, formal commitment to provide the contributions by the employer is made through the biennial budget for KERS and SPRS.

For the fiscal year ended June 30, 2023, participating employers of CERS Nonhazardous, CERS Hazardous, KERS Hazardous, and SPRS contributed a percentage of each employee's creditable compensation. The actuarially determined rates set by the Boards for the fiscal year is a percentage of each employee's creditable compensation. Administrative costs of KPPA are financed through employer contributions and investment earnings. See the charts on the following page for the fiscal year employer contribution rates, including the actuarially recommended rates.

Contribution Rate Breakdown by Fund As of June 30, 2023						
	Pension		Insurance		Combined Total	
Fund	Employer Contribution Rates	Actuarially Recommended Rates	Employer Contribution Rates	Actuarially Recommended Rates	Employer Contribution Rates	Actuarially Recommended Rates
CERS Nonhazardous**	23.40%	23.40%	3.39%	3.39%	26.79%	26.79%
CERS Hazardous**	42.81%	42.81%	6.78%	6.78%	49.59%	49.59%
KERS Nonhazardous *	7.82%	7.82%	2.15%	2.15%	9.97%	9.97%
KERS Hazardous	31.82%	31.82%	0.00%	0.00%	31.82%	31.82%
SPRS ***	85.32%	126.40%	14.11%	14.11%	99.43%	140.51%

** House Bill 8 passed during the 2021 legislative session required, beginning July 1, 2021, the KERS Nonhazardous employers pay the normal cost for all employees plus a flat amount which is equal to their assigned percentage of the annual dollar amount that is sufficient to amortize the total unfunded actuarial accrued liability of the system over a closed period. The percentage is based on the liabiltiy that was attributable to the agency as of June 30, 2019.*

***House Bill 362 passed during the 2018 legislative session caps CERS employer contribution rate increases up to 12% per year over the prior fiscal year for the period of July 1, 2018 to June 30, 2028.*

**** House Bill 1 passed during the 2022 legislative session included $215 million in FY 2021-2022 for SPRS pension fund to be applied to the unfunded liabililty, which immediately lowered the SPRS contribution rate from the Fiscal Year 2022 146.06% rate to 99.43% for Fiscal Year 2023.*

As of June 30, 2023, the date of the most recent actuarial valuation, membership consisted of:

TIER 1:

Tier 1 plan members who began participating prior to September 1, 2008, are required to contribute 5% (Nonhazardous) or 8% (Hazardous) of their annual creditable compensation. These members are classified in the Tier 1 structure of benefits. Interest is paid each June 30 on members' accounts at a rate of 2.5%. If a member terminates employment and applies to take a refund, the member is entitled to a full refund of contributions and interest.

TIER 2:

Tier 2 plan members, who began participating on or after September 1, 2008, and before January 1, 2014, are required to contribute 6% (Nonhazardous) or 9% (Hazardous) of their annual creditable compensation. Further, 1% of these contributions are deposited to an account created for the payment of health insurance benefits under 26 USC Section 401(h) in the Insurance Fund (see Kentucky Administrative Regulation (KAR) 105 KAR 1:420). These members are classified in the Tier 2 structure of benefits. Interest is paid each June 30 on members' accounts at a rate of 2.5%. If a member terminates employment and applies to take a refund, the member is entitled to a full refund of contributions and interest; however, the 1% Health Insurance Contribution (HIC) to the 401(h) account is non-refundable and is forfeited.

TIER 3:

Tier 3 plan members, who began participating on or after January 1, 2014, are required to contribute to the Cash Balance Plan. The Cash Balance Plan is known as a hybrid plan because it has characteristics of both a defined benefit plan and a defined contribution plan. Members contribute 5% (Nonhazardous) or 8% (Hazardous) of their monthly creditable compensation which is deposited into their account, and an additional 1% which is deposited to an account created for payment of health insurance benefits under 26 USC Section 401(h) in the Insurance Fund (see 105 KAR1:420), which is not refundable. Tier 3 member accounts are also credited with an employer pay credit in the amount of 4% (Non-Hazardous) or 7.5% (Hazardous) of the member's monthly creditable compensation. The employer pay credit amount is deducted from the total employer contribution rate paid on the member's monthly creditable compensation. If a vested (60 months of service) member terminates employment and applies to take a refund, the member is entitled to the members contributions (less HIC) plus employer pay credit plus interest (for both employee contributions and employer pay). If a non-vested (less than 60 months) member terminates employment and applies to take a refund, the member is entitled to receive employee contributions (less HIC) plus interest (on employee contributions only).

Tier 3

Interest is paid into the Tier 3 member's account. The account currently earns 4% interest credit on the member's accumulated account balance as of June 30 of the previous year. The member's account may be credited with additional interest if the fund's five-year Geometric Average Net Investment Return (GANIR) exceeded 4%. If the member was actively employed and participating in the fiscal year, and if KPPA's GANIR for the previous five years exceeds 4%, then the member's account will be credited with 75% of the amount of the returns over 4% on the account balance as of June 30 of the previous year (Upside Sharing Interest). It is possible that one fund in KPPA may get an Upside Sharing Interest, while another may not.

Upside Sharing Interest

Upside Sharing Interest is credited to both the member contribution balance and Employer Pay Credit balance. Upside Sharing Interest is an additional interest credit. Member accounts automatically earn 4% interest annually. The GANIR is calculated on an individual fund basis.

The chart below shows the interest calculated on the members' balances as of June 30, 2022, and credited to each member's account on June 30, 2023.

(A-B) = C x 75% = D then B + D = Interest ($ in Thousands)						
	A	B	C	D		
Fund	5-Year Geometric Average Return	Less Guarantee Rate of 4%	Upside Sharing Interest	Upside Sharing Interest X 75% = Upside Gain	Interest Rate Earned (4% + Upside)	Total Interest Credited to Member Accounts
CERS Nonhazardous	6.52%	4.00%	2.52%	1.89%	5.89%	$25,233
CERS Hazardous	6.68%	4.00%	2.68%	2.01%	6.01%	$8,761
KERS Nonhazardous	5.61%	4.00%	1.61%	1.21%	5.21%	$9,667
KERS Hazardous	6.40%	4.00%	2.40%	1.80%	5.80%	$3,186
SPRS	6.09%	4.00%	2.09%	1.57%	5.57%	$513

Insurance Fund Description

The Insurance Fund was established to provide hospital and medical insurance for eligible members receiving benefits from CERS, KERS, and SPRS. The eligible non-Medicare retirees are covered by the Department of Employee Insurance (DEI) plans. The KPPA Board contracts with Humana to provide health care benefits to the eligible Medicare retirees through a Medicare Advantage Plan. KPPA submits the premium payments to DEI and Humana. The Insurance Fund pays a prescribed contribution for whole or partial payment of required premiums to purchase hospital and medical insurance. For the fiscal year ended June 30, 2023, insurance premiums withheld from benefit payments for KPPA's members were $23.7 million and $4.0 million for CERS Nonhazardous and Hazardous, respectively; $19.5 million and $1.4 million for KERS Nonhazardous and Hazardous, respectively; and, $0.4 million for SPRS.

The amount of benefit paid by the Insurance Fund is based on years of service. For members who began participating prior to July 1, 2003, a percentage of the contribution rate is paid based on years of service with 100% of the contribution rate being paid with 20 years of service. Since the passage of House Bill 290 (2004 Kentucky General Assembly), medical insurance benefits have been calculated differently for members who began participating on or after July 1, 2003. Once members reach a minimum vesting period of 10 years, Nonhazardous employees whose participation began on or after July 1, 2003, earn $10 per month for insurance benefits at retirement for every year of earned service. Hazardous employees whose participation began on or after July 1, 2003 earn $15 per month for insurance benefits at retirement for every year of earned service without regard to a maximum dollar amount. Upon death of a Hazardous employee, the employee's spouse receives $10 per month for insurance benefits for each year of the deceased employee's earned Hazardous service. This dollar amount is subject to adjustment annually, which is currently 1.5%, based upon Kentucky Revised Statutes. House Bill 1 (2008 Kentucky General Assembly) changed the minimum vesting requirement for participation in the health insurance plan to 15 years for members whose participation began on or after September 1, 2008. This benefit is not protected under the inviolable contract provisions of Kentucky Revised Statutes 16.652, 61.692 and 78.852. The Kentucky General Assembly reserves the right to suspend or reduce this benefit if, in its judgment, the welfare of the Commonwealth so demands. The Insurance Plan pays 100% of the contribution rate for hospital and medical insurance premiums for the spouse and dependents of members who die as a direct result of an act in the line of duty or from a duty-related injury.

For members participating prior to July 1, 2003, years of service and respective percentages of the maximum benefit are as follows:

Portion Paid by Insurance Fund
As of June 30, 2023

Years of Service	Paid by Insurance Fund (%)
20+ years	100.00%
15-19 years	75.00%
10-14 years	50.00%
4-9 years	25.00%
Less than 4 years	0.00%

The amount of benefit paid by the Insurance Fund is based on years of service. For members participating on or after July 1, 2003, the dollar amounts of the benefit per year of service are as follows:

Dollar Contribution for Fiscal Year 2023 For Member participation date on or after July 1, 2003

	(in Whole $)
CERS Nonhazardous	$14.20
CERS Hazardous	$21.30
KERS Nonhazardous	$14.20
KERS Hazardous	$21.30
SPRS	$21.30

Note C. Cash, Short-Term Investments & Securities Lending Collateral

The provisions of GASB *Statement No. 28 Accounting and Financial Reporting for Securities Lending Transactions* require that cash received as collateral on securities lending transactions and investments made with that cash must be reported as assets on the financial statements. The non-cash collateral is not reported because the securities received as collateral are unable to be pledged or sold unless the borrower defaults. In accordance with GASB *No. 28*, KPPA classifies certain other investments, not related to the securities lending program, as short-term. Cash and short-term investments consist of the following:

Cash, Short-Term Investments, & Securities Lending Collateral
As of June 30, 2023 ($ in Thousands)

CERS	Pension	Insurance
CERS Nonhazardous		
Cash	$662	$259
Short-Term Investments	303,178	132,269
Securities Lending Collateral Invested	176,126	59,513
Total	**$479,966**	**$192,041**
CERS Hazardous		
Cash	$262	$8
Short-Term Investments	134,692	31,789
Securities Lending Collateral Invested	60,803	29,266
Total	**$195,757**	**$61,063**

KERS	Pension	Insurance
KERS Nonhazardous		
Cash	$375	$105
Short-Term Investments	648,780	170,091
Securities Lending Collateral Invested	71,804	26,420
Total	**$720,959**	**$196,616**
KERS Hazardous		
Cash	$141	$9
Short-Term Investments	89,143	29,906
Securities Lending Collateral Invested	18,277	11,270
Total	**$107,561**	**$41,185**

SPRS	Pension	Insurance
Cash	$35	$8
Short-Term Investments	133,780	10,868
Securities Lending Collateral Invested	12,028	4,491
Total	**$145,843**	**$15,367**

Note D. Investments

Kentucky Revised Statutes 61.650 and 78.790 specifically state that the Board of Trustees for the respective retirement Plan(s) shall have the full and exclusive power to invest and reinvest the funds of the Plan(s) they govern. In addition, Kentucky Revised Statutes 61.645 and 78.782 require three (3) members of each Board to have at least ten (10) years of investment experience as defined by the statutes. The Boards of Trustees are required to establish Investment Committees who are specifically charged with implementing the investment policies adopted by the Board of Trustees and to act on behalf of the Board of Trustees on all investment-related matters. The Board of Trustees and the Investment Committee members are required to discharge their duty to invest the funds of the Plans in accordance with the “Prudent Person Rule” as set forth in Kentucky Revised Statutes 61.650 and 78.790 and to manage those funds consistent with the long-term nature of the trusts and solely in the interest of the members and beneficiaries. All internal investment staff of the Kentucky Public Pensions Authority, and investment consultants must adhere to the Code of Ethics and Standards of Professional Conduct of the CFA Institute and all board trustees must adhere to the Code of Conduct for Members of a Pension Scheme Governing Body of the CFA Institute. The Boards of Trustees are authorized to adopt policies. The Boards of Trustees have adopted Investment Policy Statements (IPS) which define the framework for investing the assets of the Plans. The IPS is intended to provide general principles for establishing the investment goals of the Plans, the allocation of assets, employment of outside asset management, and monitoring the results of the respective Plans. A copy of each Board’s IPS can be found on the KPPA website. By statutes, the Boards, through adopted written policies, shall maintain ownership and control over its assets held in its unitized managed custodial account. Additionally, the Investment Committees establish specific investment guidelines that are summarized below and are included in the Investment Management Agreement (IMA) for each investment management firm.

Equity

Public Equity

Investments may be made in common stock; securities convertible into common stock; preferred stock of publicly traded companies on stock markets; asset class relevant Exchange Traded Funds (ETFs); or any other type of security contained in a manager’s benchmark. Each individual equity account has a comprehensive set of investment guidelines, which contains a listing of permissible investments, portfolio restrictions, and standards of performance.

Private Equity

Subject to the specific approval of the Investment Committees, Private Equity investments may be made for the purpose of creating a diversified portfolio of alternative investments under the Equity umbrella. Private equity investments are expected to achieve attractive risk-adjusted returns and, by definition, possess a higher degree of risk with a higher return potential than traditional investments. Accordingly, total rates of return from private equity investments are expected to be greater than those that might be obtained from conventional public equity or debt investments.

Fixed Income

Core Fixed Income

The Core Fixed Income accounts may include, but are not limited to, the following securities: U.S. government and agency bonds; investment grade U.S. corporate credit; investment grade non-U.S. corporate credit; mortgages, including residential mortgage-backed securities; commercial mortgage-backed securities and whole loans; asset-backed securities; and, asset class relevant ETFs.

Specialty Credit

The Specialty Credit accounts may include, but are not limited to, the following types of securities and investments: non-investment grade U.S. corporate credit including both bonds and bank loans; non-investment grade non-U.S. corporate credit including bonds and bank loans; private debt; municipal bonds; non-U.S. sovereign debt; mortgages, including residential mortgage-backed securities; commercial mortgage backed securities and whole loans; asset-backed securities and emerging market debt (EMD), including both sovereign EMD and corporate EMD; and asset class relevant ETFs. Each individual Specialty Credit account shall have a comprehensive set of investment guidelines which contains a listing of permissible investments, portfolio restrictions, risk parameters, and standards of performance for the account.

Cash and Cash Equivalent Securities

The following short-term investment vehicles are considered acceptable: Publicly traded investment grade corporate bonds; variable rate demand notes; government and agency bonds; mortgages, municipal bonds, and collective short-term investment funds (STIFs), money market funds or instruments (including, but not limited to certificates of deposit, bank notes, deposit notes, bankers' acceptance and commercial paper) and repurchase agreements relating to the above instruments. Instruments may be selected from among those having an investment grade rating at the time of purchase by at least one recognized bond rating service. In cases where the instrument has a split rating, the lower of the two ratings shall prevail. All instruments shall have a maturity at the time of purchase that does not exceed 397 days.

Fixed income managers, who utilize cash equivalent securities as an integral part of their investment strategy, are exempt from the permissible investments contained in the preceding paragraph. Permissible short-term investments for Fixed Income managers shall be included in the investment manager's investment guidelines.

Inflation Protected

Real Estate and Real Return

Subject to the specific approval of the corresponding Investment Committee, investments may be made to create a diversified portfolio of alternative investments. Investments are made in equity and debt real estate for the purpose of achieving the highest total rate of return possible consistent with a prudent level of risk. The purpose of the Real Return investments are to identify strategies that provide both favorable stand-alone risk-adjusted returns as well as the benefit of hedging inflation for the broader plans.

Investment Expenses

In accordance with GASB *Statement No. 67 and No. 74*, *Financial Reporting for Pension Plans and Other Postemployment Benefit Plans other than Pension Plans*, KPPA has exercised professional judgment to report investment expenses. It is not cost-beneficial to separate certain investment expenses from either the related investment income or the general administrative expenses. In fiscal year 2015, KPPA changed Private Equity investment fees from a gross basis to a net basis. The Boards made the decision to enhance transparency reporting. Prior to 2015, the majority of the trusts' Private Equity investment fees were netted against investment activity which is the standard used within the Private Equity sector. Trusts' net investment income has always included these fees regardless of the reporting method used. During the 2017 Regular Session of the Kentucky General Assembly, legislators passed SB 2 which requires the reporting of all investment fees and expenses. KPPA staff continues to work with managers to enhance fee and expense reporting.

Derivatives

Derivative instruments are financial contracts that have various effective dates and maturity dates and whose values depend on the values of one or more underlying assets, reference rates, or financial indices. External managers and KPPA Investment Staff are permitted to invest in derivative securities, or strategies which make use of derivative investments, for exposure, cost efficiency and risk management purposes, if such investments do not cause the portfolio to be leveraged beyond a 100% invested position. Any derivative security shall be sufficiently liquid that it can be expected to be sold at, or near, its most recently quoted market price. Examples of such derivatives include, but are not limited to the following securities: foreign currency forward contracts; futures; options; and swaps.

For accounting and financial reporting purposes, all derivative instruments are considered investment derivative instruments. The derivatives have been segregated on the Combining Statement of Fiduciary Net Position for both the Pension and Insurance Funds.

In accordance with GASB *Statement No. 53, Accounting and Financial Reporting for Derivative Instruments*, KPPA provides additional disclosure regarding its derivatives. The charts included represent the derivatives by types as of June 30, 2023. The chart shows the change in fair value of derivative types as well as the current fair value and notional value. The notional value is the reference amount of the underlying asset times its current spot price. The trusts hold investments in options, commitments, futures, and forward foreign exchange contracts.

CERS Pension and Insurance Derivative Instruments - GASB 53
As of June 30, 2023 ($ in Thousands)

Derivatives (by Type)	Net Appreciation (Depreciation) in Fair Value	Classification	Fair Value	Notional
CERS Nonhazardous - Pension				
FX Spots and Forwards	$(855)	Investment	$(21)	-
Futures	(528)	Investment	(2,457)	252,519
Commits and Options	(1)	Investment	-	-
Swaps	-	Investment	-	-
CERS Nonhazardous - Insurance				
FX Spots and Forwards	$(263)	Investment	$(5)	-
Futures	(253)	Investment	(902)	91,565
Commits and Options	(1)	Investment	-	-
Swaps	-	Investment	-	-
CERS Hazardous - Pension				
FX Spots and Forwards	$(287)	Investment	$(9)	-
Futures	(200)	Investment	(853)	87,554
Commits and Options	(1)	Investment	-	-
Swaps	-	Investment	-	-
CERS Hazardous - Insurance				
FX Spots and Forwards	$(143)	Investment	$(2)	-
Futures	(84)	Investment	(410)	41,897
Commits and Options	-	Investment	-	-
Swaps	-	Investment	-	-

KERS Pension and Insurance Derivative Instruments - GASB 53
As of June 30, 2023 ($ in Thousands)

Derivatives (by Type)	Net Appreciation (Depreciation) in Fair Value	Classification	Fair Value	Notional
KERS Nonhazardous - Pension				
FX Spots and Forwards	$(152)	Investment	$(3)	-
Futures	(816)	Investment	(2,042)	202,061
Commits and Options	-	Investment	-	-
Swaps	-	Investment	-	-
KERS Nonhazardous - Insurance				
FX Spots and Forwards	$(95)	Investment	$(2)	-
Futures	(181)	Investment	(476)	47,464
Commits and Options	-	Investment	-	-
Swaps	-	Investment	-	-
KERS Hazardous - Pension				
FX Spots and Forwards	$(75)	Investment	$(2)	-
Futures	(89)	Investment	(304)	30,667
Commits and Options	-	Investment	-	-
Swaps	-	Investment	-	-
KERS Hazardous - Insurance				
FX Spots and Forwards	$(3)	Investment	$1	-
Futures	(70)	Investment	(202)	20,138
Commits and Options	-	Investment	-	-
Swaps	-	Investment	-	-

SPRS Pension and Insurance Derivative Instruments - GASB 53
As of June 30, 2023 ($ in Thousands)

Derivatives (by Type)	Net Appreciation (Depreciation) in Fair Value	Classification	Fair Value	Notional
SPRS Pension				
FX Spots and Forwards	$(32)	Investment	$(1)	-
Futures	(127)	Investment	(341)	33,776
Commits and Options	-	Investment	-	-
Swaps	-	Investment	-	-
SPRS Insurance				
FX Spots and Forwards	$(22)	Investment	$(1)	-
Futures	(26)	Investment	(77)	7,732
Commits and Options	-	Investment	-	-
Swaps	-	Investment	-	-

Derivative Instruments Subject to Counterparty Credit Risk - GASB 53
As of June 30, 2023

Pension

Counterparty	S & P Ratings	CERS Percentage of Net Exposure	CERS Haz Percentage of Net Exposure	KERS Percentage of Net Exposure	KERS Haz Percentage of Net Exposure	SPRS Percentage of Net Exposure
Derivative Instruments - Pension						
Australia & New Zealand Banking Group Ltd	AA-	0.40%	0.15%	0.08%	0.04%	0.02%
The Bank of New York Mellon Corp	A	1.98%	0.69%	0.55%	0.19%	0.10%
Barclays PLC	BBB+	4.86%	1.90%	1.02%	0.50%	0.21%
Brown Brothers Harriman & Co	NR	0.45%	0.15%	0.12%	0.04%	0.02%
Canadian Imperial Bank of Commerce	A+	4.68%	1.83%	0.99%	0.48%	0.20%
Citigroup Inc	BBB+	9.64%	3.76%	2.03%	0.99%	0.42%
The Goldman Sachs Group Inc	BBB+	5.12%	2.00%	1.08%	0.53%	0.22%
HSBS Holding PLC	A-	6.30%	2.37%	1.46%	0.63%	0.28%
JPMorgan Chase & Co	A-	9.29%	3.54%	2.08%	0.94%	0.41%
Morgan Stanley	A-	4.94%	1.93%	1.04%	0.51%	0.21%
Royal Bank of Canada	AA-	2.63%	1.03%	0.55%	0.27%	0.11%
State Street Corp	A	2.97%	1.16%	0.62%	0.31%	0.13%
The Toronto-Dominion Bank	AA-	0.04%	0.01%	0.01%	0.00%	0.00%
UBS Group AG	A-	3.88%	1.52%	0.82%	0.40%	0.17%
TOTAL		**57.18%**	**22.04%**	**12.45%**	**5.83%**	**2.50%**

Derivative Instruments Subject to Counterparty Credit Risk - GASB 53
As of June 30, 2023

Insurance

Counterparty	S & P Ratings	CERS Percentage of Net Exposure	CERS Haz Percentage of Net Exposure	KERS Percentage of Net Exposure	KERS Haz Percentage of Net Exposure	SPRS Percentage of Net Exposure
Derivative Instruments - Insurance						
Australia & New Zealand Banking Group Ltd	AA-	0.37%	0.15%	0.08%	0.04%	0.02%
The Bank of New York Mellon Corp	A	2.97%	1.03%	0.82%	0.28%	0.15%
Barclays PLC	BBB+	4.68%	1.83%	0.98%	0.48%	0.20%
Brown Brothers Harriman & Co	NR	0.57%	0.20%	0.16%	0.05%	0.03%
Canadian Imperial Bank of Commerce	A+	4.42%	1.72%	0.93%	0.46%	0.19%
Citigroup Inc	BBB+	9.10%	3.55%	1.91%	0.94%	0.39%
The Goldman Sachs Group Inc	BBB+	4.85%	1.90%	1.02%	0.50%	0.21%
HSBS Holding PLC	A-	6.71%	2.50%	1.59%	0.66%	0.31%
JPMorgan Chase & Co	A-	9.71%	3.67%	2.21%	0.97%	0.43%
Morgan Stanley	A-	4.68%	1.83%	0.98%	0.48%	0.20%
Royal Bank of Canada	AA-	2.51%	0.98%	0.53%	0.26%	0.11%
State Street Corp	A	2.80%	1.09%	0.59%	0.29%	0.12%
The Toronto-Dominion Bank	AA-	0.04%	0.01%	0.01%	0.00%	0.00%
UBS Group AG	A-	3.75%	1.46%	0.79%	0.39%	0.16%
TOTAL		**57.16%**	**21.92%**	**12.60%**	**5.80%**	**2.52%**

Custodial Credit Risk for Deposits

Custodial credit risk for deposits is the risk that may occur as a result of a financial institution's failure, whereby KPPA deposits may not be returned. All non-investment related bank balances are held by JP Morgan Chase and each individual account is insured by the Federal Deposit Insurance Corporation (FDIC). None of these balances were exposed to custodial credit risk as they were either insured or collateralized at required levels.

Custodial Credit Risk for Deposits - GASB 40 As of June 30, 2023 ($ in Thousands)	
CERS Nonhazardous Pension	$1,282
CERS Hazardous Pension	238
KERS Nonhazardous Pension	739
KERS Hazardous Pension	120
SPRS Pension	41
CERS Nonhazardous Insurance	267
CERS Hazardous Insurance	9
KERS Nonhazardous Insurance	122
KERS Hazardous Insurance	9
SPRS Insurance	15
Clearing	420
Excess Benefit	$-
Note: All the above balances are held at JPM Chase	

Custodial Credit Risk for Investments

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, KPPA will not be able to recover the value of an investment or collateral securities that are in the possession of an outside party. As of June 30, 2023, the currencies in the chart below were uninsured and unregistered, with securities held by the counterparty or by its trust department or agent but not in Trust's name. Below are total cash and securities held by Global Managers and consist of various currencies.

Custodial Credit Risk for Investments - GASB 40 As of June 30, 2023 ($ in Thousands)	
CERS	
CERS Nonhazardous Pension Fund Foreign Currency	$1,139,262
CERS Hazardous Pension Fund Foreign Currency	394,304
CERS Nonhazardous Insurance Fund Foreign Currency	422,566
CERS Hazardous Insurance Fund Foreign Currency	208,415
KERS	
KERS Nonhazardous Pension Fund Foreign Currency	309,136
KERS Hazardous Pension Fund Foreign Currency	106,312
KERS Nonhazardous Insurance Fund Foreign Currency	181,188
KERS Hazardous Insurance Fund Foreign Currency	73,852
SPRS	
SPRS Pension Fund Foreign Currency	54,518
SPRS Insurance Fund Foreign Currency	31,668

Pension Plans Securities

CERS Pension Investment Summary - GASB 40
As of June 30, 2023 ($ in Thousands)

Type	Fair Value	
	Nonhazardous	Hazardous
Core Fixed Income	$862,405	$299,149
Public Equities	4,327,129	1,494,663
Private Equities	689,017	229,764
Specialty Credit	1,717,669	591,592
Derivatives	(2,478)	(862)
Real Return	268,971	89,758
Real Estate	545,935	173,707
Short-Term Investments	303,178	134,692
Accounts Receivable (Payable), Net	(18,000)	(6,165)
Total	**$8,693,826**	**$3,006,298**

KERS Pension Investment Summary - GASB 40
As of June 30, 2023 ($ in Thousands)

Type	Fair Value	
	Nonhazardous	Hazardous
Core Fixed Income	$708,383	$106,016
Public Equities	1,169,731	389,000
Private Equities	159,836	63,179
Specialty Credit	604,758	179,012
Derivatives	(2,045)	(306)
Real Return	72,726	24,325
Real Estate	179,034	50,564
Short-Term Investments	648,780	89,143
Accounts Receivable (Payable), Net	(19,168)	(2,124)
Total	**$3,522,035**	**$898,809**

SPRS Pension Investment Summary - GASB 40
As of June 30, 2023 ($ in Thousands)

Type	Fair Value
Core Fixed Income	$118,419
Public Equities	190,147
Private Equities	16,596
Specialty Credit	99,764
Derivatives	(342)
Real Return	10,693
Real Estate	21,466
Short-Term Investments	133,780
Accounts Receivable (Payable), Net	(3,016)
Total	**$587,507**

Insurance Plans Securities

CERS Insurance Investment Summary - GASB 40
As of June 30, 2023 ($ in Thousands)

Type	Fair Value	
	Nonhazardous	Hazardous
Core Fixed Income	$327,065	$148,991
Public Equities	1,633,030	807,897
Private Equities	268,195	150,750
Specialty Credit	641,632	318,176
Derivatives	(908)	(412)
Real Return	82,403	43,561
Real Estate	196,683	107,912
Short-Term Investments	132,269	31,789
Accounts Receivable (Payable), Net	(5,430)	(2,624)
Total	**$3,274,939**	**$1,606,040**

KERS Insurance Investment Summary - GASB 40
As of June 30, 2023 ($ in Thousands)

Type	Fair Value	
	Nonhazardous	Hazardous
Core Fixed Income	$171,536	$72,740
Public Equities	637,103	268,599
Private Equities	94,390	53,885
Specialty Credit	289,421	129,503
Derivatives	(478)	(200)
Real Return	31,681	17,472
Real Estate	60,926	45,368
Short-Term Investments	170,091	29,906
Accounts Receivable (Payable), Net	(2,412)	(1,294)
Total	**$1,452,258**	**$615,979**

SPRS Insurance Investment Summary - GASB 40
As of June 30, 2023 ($ in Thousands)

Type	Fair Value
Core Fixed Income	$27,887
Public Equities	108,362
Private Equities	23,922
Specialty Credit	51,505
Derivatives	(78)
Real Return	6,563
Real Estate	17,319
Short-Term Investments	10,868
Accounts Receivable (Payable), Net	(514)
Total	**$245,834**

Credit Risk Debt Securities

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The debt security portfolios are managed by the Office of Investments staff and by external investment management firms. All portfolio managers are required by the CERS IPS and/or the KRS IPS to maintain diversified portfolios. Each portfolio is also required to be in compliance with risk management guidelines that are assigned to them based upon the portfolio's specific mandate. In total, the Pension and Insurance Funds' debt securities portfolios are managed using the following guidelines adopted by the Board:

- Bonds, notes, or other obligations issued or guaranteed by the U.S. Government, its agencies or instrumentalities are permissible investments and may be held without restrictions.
- The duration of the core fixed income portfolios combined shall not vary from that of the system's Fixed Income Index by more than +/- 25% duration as measured by effective duration, modified duration or dollar duration except when the system's Investment Committee has determined a target duration to be used for an interim basis.
- The amount invested in the debt of a single corporation shall not exceed 5% of the total fair value of CERS' and KRS' assets.
- No public Fixed Income manager shall invest more than 5% of the fair value of assets held in any single issue Short-Term instrument with the exception of U.S. Government issued, guaranteed or agency obligations.

As of June 30, 2023, the Pension portfolio had $831.5 million in debt securities rated below BBB- which does not include not rated (NR) or withdrawn (WD) securities.

Pension Debt Securities - GASB 40
As of June 30, 2023 ($ in Thousands)

Rating	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
AAA	$207,873	$72,715	$162,203	$25,275	$27,227
AA+	8,740	3,126	5,859	1,031	997
AA	13,162	4,691	9,055	1,561	1,537
AA-	11,015	3,886	8,130	1,324	1,371
A+	15,385	5,343	12,412	1,892	2,083
A	26,441	9,236	20,812	3,221	3,491
A-	70,663	24,589	56,839	8,654	9,522
BBB+	88,622	30,861	71,103	10,839	11,908
BBB	81,093	28,561	60,285	9,801	10,186
BBB-	129,030	45,808	87,168	15,908	15,253
BB+	73,558	27,385	39,259	9,653	7,738
BB	59,932	22,588	30,788	8,588	6,646
BB-	64,488	24,051	34,781	9,481	7,526
B+	56,325	20,793	27,879	8,339	6,266
B	60,175	22,163	29,712	8,999	6,743
B-	46,043	16,790	21,348	7,039	5,069
CCC+	20,780	7,738	11,903	3,175	2,600
CCC	5,823	2,252	3,991	943	857
CCC-	416	163	310	68	65
D	183	62	34	28	13
NR	1,284,348	427,196	436,582	118,631	60,178
WD	1,012	384	207	115	50
Total Credit Risk Debt Securities	**2,325,107**	**800,381**	**1,130,660**	**254,565**	**187,326**
Government Agencies	9,824	3,540	6,204	1,147	1,061
Government Mortgage-Backed Securities	89,076	31,107	70,230	10,854	11,779
Government Issued Commercial Mortgage Backed	4,051	1,405	3,328	498	556
Government Collateralized Mortgage Obligations	12,474	4,510	7,678	1,449	1,317
Government Bonds	139,542	49,798	95,041	16,515	16,144
Total	**$2,580,074**	**$890,741**	**$1,313,141**	**$285,028**	**$218,183**

Note: These ratings are based on Standard & Poor's (S&P) Global Ratings. Where S&P ratings are unavailable, equivalent Fitch and Moody's Ratings are used as proxies.

Differences due to rounding.

Government Agencies, Government Mortgage-Backed Securities, Government Issued Commercial Mortgage Backed and Government Bonds are highly rated securities since they are backed by the US Government.

The NR reported indicate a rating has not been assigned.

As of June 30, 2023, the Insurance portfolio had $363.8 million in debt securities rated below BBB- which does not include not rated (NR) or withdrawn (WD) securities.

Insurance Debt Securities - GASB 40
As of June 30, 2023 ($ in Thousands)

Rating	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
AAA	$54,971	$24,966	$28,440	$11,503	$4,717
AA+	1,695	759	821	252	150
AA	5,165	2,333	2,605	957	448
AA-	3,564	1,619	1,845	748	306
A+	5,911	2,686	3,117	1,300	504
A	9,236	4,197	4,791	1,955	792
A-	27,333	12,433	14,283	5,944	2,335
BBB+	32,388	14,733	16,921	7,045	2,767
BBB	30,076	13,615	15,500	6,035	2,589
BBB-	48,037	21,299	25,788	9,282	4,081
BB+	28,444	11,759	15,716	4,402	2,318
BB	25,065	9,815	15,003	4,060	1,928
BB-	26,617	10,328	16,604	4,684	2,011
B+	24,389	9,432	15,810	4,387	1,839
B	25,002	9,618	16,552	4,583	1,873
B-	19,162	7,233	13,410	3,642	1,408
CCC+	8,805	3,372	5,658	1,652	651
CCC	2,659	995	1,607	494	190
CCC-	203	76	118	37	15
D	86	32	75	18	6
NR	495,136	263,007	198,103	111,031	40,267
WD	316	132	169	22	28
Total Credit Risk Debt Securities	**874,260**	**424,439**	**412,936**	**184,033**	**71,223**
Government Agencies	4,076	1,833	2,017	683	357
Government Mortgage-Backed Securities	35,946	16,344	18,693	7,700	3,077
Government Issued Commercial Mortgage Backed	1,708	778	896	380	146
Government Collateralized Mortgage Obligations	4,646	2,088	2,290	762	407
Government Bonds	48,061	21,685	24,125	8,685	4,182
Total	**$968,697**	**$467,167**	**$460,957**	**$202,243**	**$79,392**

Differences due to rounding.

Government Agencies, Government Mortgage-Backed Securities, Government Issued Commercial Mortgage Backed and Government Bonds are highly rated securities since they are backed by the US Government.

The NR reported indicate a rating has not been assigned.

The WD reported are ratings which have been withdrawn.

Concentration of Credit Risk Debt Securities

Concentration of credit risk is the risk of loss attributed to the magnitude of an entity's exposure in a single issuer. The total debt securities portfolio is managed using the following general guidelines adopted by the CERS and KRS Boards: bonds, notes, or other obligations issued or guaranteed by the U.S. Government, its agencies, or instrumentalities are permissible investments and may be held without restrictions. The amount invested in the debt of a single issuer shall not exceed 5% of the total fair value of the Plans' fixed income assets.

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. Duration measures the sensitivity of the market prices of fixed income securities to changes in the yield curve and can be measured using two methodologies: effective or modified duration. Effective duration uses the present value of cash flows, weighted for those cash flows as a percentage of the investment's full price, and makes adjustments for any bond features that would retire the bonds prior to maturity. The modified duration, similar to effective duration, measures the sensitivity of the market prices to changes in the yield curve, but does not assume the securities will be called prior to maturity.

Below are the fair values and modified durations for the combined fixed income securities.

Interest Rate Risk - Modified Duration - GASB 40
As of June 30, 2023 ($ in Thousands)
CERS Pension

TYPE	Fair Value	Weighted Avg Modified Duration	Fair Value	Weighted Avg Modified Duration
	Nonhazardous		Hazardous	
Asset Backed Securities	$171,506	1.25	$59,618	1.26
Financial Institutions	262,165	2.13	91,755	2.16
Collateralized Mortgage Obligations	26,945	1.70	9,655	1.68
Commercial Mortgage Backed Securities	72,219	2.41	25,294	2.42
Corporate Bonds - Industrial	463,720	3.28	170,564	3.36
Corporate Bonds - Utilities	61,802	3.24	21,870	3.26
Agencies	9,824	3.10	3,541	3.13
Government Bonds - Sovereign Debt	2,286	7.82	876	7.70
Mortgage Back Securities Pass-through - Not CMO's	89,885	6.25	31,412	6.24
Local Authorities - Municipal Bonds	11,852	8.92	4,470	9.04
Supranational - Multi-National Bonds	3,297	3.02	1,287	3.02
Treasuries	139,542	5.39	49,798	5.40
Unclassified	1,261,557	0.05	419,345	0.06
Other	3,474	3.38	1,256	3.46
Total	**$2,580,074**	**1.66**	**$890,741**	**1.74**

Interest Rate Risk - Modified Duration - GASB 40
As of June 30, 2023 ($ in Thousands)
KERS Pension

TYPE	Fair Value	Weighted Avg Modified Duration	Fair Value	Weighted Avg Modified Duration
	Nonhazardous		Hazardous	
Asset Backed Securities	$136,084	1.22	$21,123	1.23
Financial Institutions	181,697	2.21	33,993	2.11
Collateralized Mortgage Obligations	17,802	1.85	3,171	1.73
Commercial Mortgage Backed Securities	55,900	2.36	8,766	2.40
Corporate Bonds - Industrial	276,560	3.28	63,518	3.26
Corporate Bonds - Utilities	47,629	3.21	7,744	3.28
Agencies	6,204	2.83	1,147	3.05
Government Bonds - Sovereign Debt	719	9.83	243	8.01
Mortgage Back Securities Pass-through - Not CMO's	70,551	6.30	10,942	6.26
Local Authorities - Municipal Bonds	4,697	7.30	1,292	8.73
Supranational - Multi-National Bonds	693	3.02	340	3.02
Treasuries	95,041	5.29	16,515	5.37
Unclassified	417,566	0.03	115,805	0.08
Other	1,998	3.24	429	3.26
Total	**$1,313,141**	**2.15**	**$285,028**	**1.90**

Interest Rate Risk - Modified Duration - GASB 40
As of June 30, 2023 ($ in Thousands)
SPRS Pension

TYPE	Fair Value	Weighted Avg Modified Duration
Asset Backed Securities	$22,936	1.22
Financial Institutions	32,687	2.18
Collateralized Mortgage Obligations	3,032	1.84
Commercial Mortgage Backed Securities	9,389	2.37
Corporate Bonds - Industrial	54,513	3.27
Corporate Bonds - Utilities	8,182	3.25
Agencies	1,061	2.86
Government Bonds - Sovereign Debt	135	9.47
Mortgage Back Securities Pass-through - Not CMO's	11,837	6.30
Local Authorities - Municipal Bonds	851	7.54
Supranational - Multi-National Bonds	142	3.02
Treasuries	16,144	5.30
Unclassified	56,909	0.07
Other	365	3.19
Total	**$218,183**	**2.33**

Interest Rate Risk - Modified Duration - GASB 40
As of June 30, 2023 ($ in Thousands)
CERS Insurance

TYPE	Fair Value	Weighted Avg Modified Duration	Fair Value	Weighted Avg Modified Duration
	Nonhazardous		**Hazardous**	
Asset Backed Securities	$61,877	1.28	$28,032	1.28
Financial Institutions	102,479	2.17	44,549	2.17
Collateralized Mortgage Obligations	9,684	1.64	4,363	1.65
Commercial Mortgage Backed Securities	28,368	2.34	12,888	2.34
Corporate Bonds - Industrial	185,723	3.32	75,902	3.31
Corporate Bonds - Utilities	24,215	3.28	10,779	3.25
Agencies	4,076	3.31	1,834	3.30
Government Bonds - Sovereign Debt	775	8.78	341	8.83
Mortgage Back Securities Pass-through - Not CMO's	36,242	6.23	16,475	6.23
Local Authorities - Municipal Bonds	4,125	8.68	1,825	8.62
Supranational - Multi-National Bonds	1,098	2.93	477	2.93
Treasuries	48,061	5.58	21,685	5.58
Unclassified	460,740	0.05	247,482	0.04
Other	1,234	3.34	535	3.35
Total	**$968,697**	**1.72**	**$467,167**	**1.54**

Interest Rate Risk - Modified Duration - GASB 40
As of June 30, 2023 ($ in Thousands)
KERS Insurance

TYPE	Fair Value	Weighted Avg Modified Duration	Fair Value	Weighted Avg Modified Duration
	Nonhazardous		Hazardous	
Asset Backed Securities	$32,848	1.25	$13,486	1.22
Financial Institutions	59,642	2.06	21,686	2.08
Collateralized Mortgage Obligations	4,829	1.67	1,691	1.78
Commercial Mortgage Backed Securities	14,699	2.33	5,977	2.29
Corporate Bonds - Industrial	108,115	3.12	33,008	3.02
Corporate Bonds - Utilities	12,733	3.29	5,012	3.23
Agencies	2,017	3.27	683	3.09
Government Bonds - Sovereign Debt	343	9.05	55	11.96
Mortgage Back Securities Pass-through - Not CMO's	18,826	6.24	7,723	6.28
Local Authorities - Municipal Bonds	1,880	8.39	392	6.13
Supranational - Multi-National Bonds	455	2.93	20	2.93
Treasuries	24,125	5.57	8,686	5.53
Unclassified	179,784	0.10	103,623	0.03
Other	661	3.06	201	2.81
Total	**$460,957**	**1.92**	**$202,243**	**1.48**

Interest Rate Risk - Modified Duration - GASB 40
As of June 30, 2023 ($ in Thousands)
SPRS Insurance

TYPE	Fair Value	Weighted Avg Modified Duration
Asset Backed Securities	$5,269	1.29
Financial Institutions	8,450	2.18
Collateralized Mortgage Obligations	845	1.63
Commercial Mortgage Backed Securities	2,433	2.35
Corporate Bonds - Industrial	14,707	3.34
Corporate Bonds - Utilities	2,037	3.26
Agencies	357	3.33
Government Bonds - Sovereign Debt	71	8.68
Mortgage Back Securities Pass-through - Not CMO's	3,104	6.23
Local Authorities - Municipal Bonds	374	8.79
Supranational - Multi-National Bonds	103	2.93
Treasuries	4,182	5.59
Unclassified	37,355	0.05
Other	105	3.40
Total	**$79,392**	**1.74**

Foreign Currency Risk

Foreign currency risk is the risk that occurs if exchange rates adversely affect the value of a non-U.S. dollar based investment or deposit within the portfolios. Currency risk exposure, or exchange rate risk, primarily resides with the portfolios Non-U.S. equity holdings, but also affects other asset classes. Neither KRS or CERS have a formal policy to limit foreign currency risk; however, some individual managers are given the latitude to hedge some currency exposures. All foreign currency transactions are classified as Short-Term Investments. All gains and losses associated with these transactions are recorded in the Net Appreciation (Depreciation) in Fair Value of Investments on the combining financial statements.

Foreign Currency Risk for the Pension - GASB 40
As of June 30, 2023 ($ in Thousands)

	CERS		KERS		SPRS
	Nonhazardous	Hazardous	Nonhazardous	Hazardous	
Australian Dollar	$29,149	$10,121	$8,031	$2,722	$1,423
Brazilian Real	20,506	7,154	5,598	1,922	996
Canadian Dollar	50,291	17,464	13,855	4,696	2,454
Chinese Yuan Renminbi	198	77	41	20	8
Colombian Peso	-	-	-	-	-
Czech Koruna	55	19	15	5	3
Danish Krone	47,598	16,512	13,137	4,441	2,325
Egyptian Pound	515	179	142	48	25
Euro	361,146	123,415	95,825	33,496	16,631
Hong Kong Dollar	92,125	31,959	25,426	8,596	4,501
Hungarian Forint	5,200	1,804	1,435	485	254
Indian Rupee	35,782	12,447	9,824	3,346	1,744
Indonesian Rupiah	24,579	8,754	6,439	2,344	1,171
Israeli Shekel	4,070	1,412	1,123	380	199
Japanese Yen	126,906	44,207	34,748	11,882	6,176
Malaysian Ringgit	3,041	1,159	682	307	135
Mexican Peso	7,577	2,701	1,981	723	361
New Taiwan Dollar	43,250	15,004	11,937	4,036	2,113
New Zealand Dollar	(112)	(44)	(24)	(12)	(5)
Norwegian Krone	6,436	2,357	1,588	628	298
Philippine Peso	1,809	706	380	186	78
Pound Sterling	119,679	41,516	33,033	11,167	5,847
Singapore Dollar	7,167	2,435	2,056	657	357
South African Rand	5,762	1,999	1,590	538	281
South Korean Won	33,021	11,570	8,940	3,107	1,598
Swedish Krona	23,430	8,128	6,468	2,186	1,144
Swiss Franc	72,398	25,115	19,985	6,756	3,537
Thai Baht	15,169	5,262	4,187	1,415	741
Turkish Lira	649	225	179	61	32
UAE Dirham	1,866	647	515	174	91
Total Foreign Investment Securities	**1,139,262**	**394,304**	**309,136**	**106,312**	**54,518**
U.S. Dollar	7,554,564	2,611,994	3,212,899	792,497	532,989
Total Investment Securities	**$8,693,826**	**$3,006,298**	**$3,522,035**	**$898,809**	**$587,507**

Foreign Currency Risk for the Insurance Funds- GASB 40
As of June 30, 2023 ($ in Thousands)

	CERS		KERS		SPRS
	Nonhazardous	Hazardous	Nonhazardous	Hazardous	
Australian Dollar	$10,814	$5,295	$4,868	$1,896	$800
Brazilian Real	7,409	3,616	3,327	1,265	553
Canadian Dollar	19,578	9,586	8,813	3,432	1,449
Chinese Yuan Renminbi	67	29	27	1	6
Czech Koruna	24	12	11	4	2
Danish Krone	17,696	8,671	7,970	3,120	1,308
Egyptian Pound	144	71	65	25	11
Euro	134,745	67,764	51,812	24,195	10,259
Hong Kong Dollar	33,352	16,342	15,021	5,880	2,465
Hungarian Forint	1,881	922	847	332	139
Indian Rupee	12,901	6,309	5,802	2,238	958
Indonesian Rupiah	8,717	4,181	3,867	1,279	677
Israeli Shekel	1,534	752	691	270	113
Japanese Yen	47,660	23,280	21,416	8,193	3,549
Malaysian Ringgit	963	431	407	55	86
Mexican Peso	2,660	1,274	1,179	386	207
New Taiwan Dollar	15,611	7,649	7,031	2,752	1,154
New Zealand Dollar	(34)	(15)	(14)	(1)	(3)
Norwegian Krone	2,207	1,031	961	247	181
Philippine Peso	610	265	253	11	57
Pound Sterling	45,183	22,140	20,349	7,966	3,339
Singapore Dollar	2,631	1,310	1,198	523	187
South African Rand	2,076	1,017	935	366	153
South Korean Won	12,345	6,004	5,530	2,047	929
Swedish Krona	8,715	4,270	3,925	1,537	644
Swiss Franc	26,515	12,993	11,942	4,675	1,960
Thai Baht	5,596	2,742	2,520	987	414
Turkish Lira	235	115	106	42	17
UAE Dirham	731	359	329	129	54
Total Foreign Investment Securities	**422,566**	**208,415**	**181,188**	**73,852**	**31,668**
U.S. Dollar	2,852,373	1,397,625	1,271,070	542,127	214,166
Total Investment Securities	**$3,274,939**	**$1,606,040**	**$1,452,258**	**$615,979**	**$245,834**

Fair Value Measurement and Applications (GASB 72)

In accordance with GASB *Statement No. 72, Fair Value Measurement and Application*, KPPA provides this additional disclosure regarding the fair value of its Pension and Insurance investments. KPPA categorizes its fair value measurements within the fair value hierarchy established by GAAP.

KPPA defined the Fair Value Hierarchy and Levels as follows:

Level 1

Quoted prices (unadjusted) in an active market for identical assets or liabilities that KPPA has the ability to access at the measurement date (e.g., prices derived from NYSE, NASDAQ, Chicago Board of Trade, and Pink Sheets). Debt and equity securities classified in Level 1 of the fair value hierarchy are valued using quoted prices (unadjusted) in an active market for identical assets or liabilities that KPPA has the ability to access at the measurement date.

Level 2

Inputs (other than quoted prices included within Level 1) that are observable for an asset or liability, either directly or indirectly. These inputs can include matrix pricing, market corroborated pricing and inputs such as yield curves and indices.

Level 3

Unobservable inputs for an asset or liability, which generally results in using the best information available for the valuation of the assets or liabilities being reported.

Net Asset Value (NAV)

The remaining investments not categorized under the fair value hierarchy are shown at net asset value (NAV). These are investments in non-governmental entities for which a readily determinable fair value is not available, such as member units or an ownership interest in partners' capital to which a proportionate share of net assets is attributed.

Fair Value Measurements and Application (GASB 72) Pension
As of June 30, 2023 ($ in Thousands)

	CERS Nonhazardous			Total	CERS Hazardous			Total
	Level				Level			
Asset Type	**1**	**2**	**3**	**Fair Value**	**1**	**2**	**3**	**Fair Value**
Public Equity								
Emerging Markets	$175,403	$-	$-	**$175,403**	$60,848	$-	$-	**$60,848**
US Equity	2,611,245	-	-	**2,611,245**	897,812	-	-	**897,812**
Non-US Equity	1,043,031	-	502,197	**1,545,228**	361,831	-	175,812	**537,643**
Total Public Equity	**3,829,679**	**-**	**502,197**	**4,331,876**	**1,320,491**	**-**	**175,812**	**1,496,303**
Fixed Income								
Agencies	187	1,579	-	**1,766**	65	548	-	**613**
Asset-Backed	-	173,835	-	**173,835**	-	60,393	-	**60,393**
Bank & Finance	-	162,772	131,959	**294,731**	-	57,000	45,375	**102,375**
Cash & Cash Equivalent	14,956	12,892	-	**27,848**	5,188	4,470	-	**9,658**
Corporate	1,638	536,483	3,192	**541,313**	639	197,216	1,119	**198,974**
Healthcare	-	28,351	-	**28,351**	-	10,216	-	**10,216**
Insurance	-	5,231	-	**5,231**	-	1,873	-	**1,873**
Municipals	-	56,023	-	**56,023**	-	19,885	-	**19,885**
Sovereign Debt	-	35,889	-	**35,889**	-	13,983	-	**13,983**
US Government	114,528	98,071	-	**212,599**	40,012	34,229	-	**74,241**
Total Fixed Income	**131,309**	**1,111,126**	**135,151**	**1,377,586**	**45,904**	**399,813**	**46,494**	**492,211**
Derivatives								
Futures	(2,457)	-	-	**(2,457)**	(853)	-	-	**(853)**
Total Derivatives	**(2,457)**	**-**	**-**	**(2,457)**	**(853)**	**-**	**-**	**(853)**
Options	-	-	-	**-**	-	-	-	**-**
Real Return								
Real Return	101,240	-	296	**101,536**	34,864	-	94	**34,958**
Total Real Return	**101,240**	**-**	**296**	**101,536**	**34,864**	**-**	**94**	**34,958**
Total Investments at Fair Value	**4,059,771**	**1,111,126**	**637,644**	**5,808,541**	**1,400,406**	**399,813**	**222,400**	**2,022,619**
Investments Measured at NAV								
Specialty Credit	-	-	-	**1,255,568**	-	-	-	**417,587**
Private Equity	-	-	-	**694,388**	-	-	-	**232,064**
Real Estate	-	-	-	**545,935**	-	-	-	**173,707**
Real Return	-	-	-	**167,200**	-	-	-	**54,268**
Fixed Income	-	-	-	**24,552**	-	-	-	**8,517**
Non US Equity	-	-	-	**20,497**	-	-	-	**7,110**
Emerging Markets	-	-	-	**4,748**	-	-	-	**1,647**
US Equity	-	-	-	**25,435**	-	-	-	**8,723**
Total Investments Measured at NAV	**-**	**-**	**-**	**2,738,323**	**-**	**-**	**-**	**903,623**
Cash and Accruals	**-**	**-**	**-**	**146,962**	**-**	**-**	**-**	**80,056**
Total Investments	**$4,059,771**	**$1,111,126**	**$637,644**	**$8,693,826**	**$1,400,406**	**$399,813**	**$222,400**	**$3,006,298**

Note: Cash Equivalents include publicly traded investment grade corporate bonds; variable rate demand notes; government and agency bonds; mortgages; municipal bonds; Short Term Investment Funds (STIF); money market funds or instruments (including, but not limited to, certificates of deposit, bank notes, deposit notes, bankers' acceptances and commercial paper); and repurchase agreements.

Fair Value Measurements and Application (GASB 72) Pension
As of June 30, 2023 ($ in Thousands)

	KERS Nonhazardous			Total	KERS Hazardous			Total	SPRS			Total
	Level				Level				Level			Fair
Asset Type	1	2	3	Fair Value	1	2	3	Fair Value	1	2	3	Value
Public Equity												
Emerging Markets	$48,410	$-	$-	$48,410	$16,366	$-	$-	$16,366	$8,569	$-	$-	$8,569
US Equity	719,671	-	-	719,671	235,016	-	-	235,016	114,894	-	-	114,894
Non-US Equity	287,869	-	115,076	402,945	97,322	-	40,727	138,049	50,956	-	15,947	66,903
Total Public Equity	1,055,950	-	115,076	1,171,026	348,704	-	40,727	389,431	174,419	-	15,947	190,366
Fixed Income												
Agencies	154	1,297	-	1,451	23	194	-	217	26	217	-	243
Asset-Backed	-	137,491	-	137,491	-	21,374	-	21,374	-	23,246	-	23,246
Bank & Finance	-	130,260	41,264	171,524	-	20,209	18,949	39,158	-	22,045	10,885	32,930
Cash & Cash Equivalent	12,285	10,610	-	22,895	1,839	1,585	-	3,424	2,054	1,773	-	3,827
Corporate	344	355,946	2,248	358,538	169	71,641	394	72,204	71	66,574	389	67,034
Healthcare	-	19,261	-	19,261	-	3,524	-	3,524	-	3,392	-	3,392
Insurance	-	3,678	-	3,678	-	639	-	639	-	634	-	634
Sovereign Debt	-	7,935	-	7,935	-	3,708	-	3,708	-	1,608	-	1,608
US Government	90,080	77,606	-	167,686	13,949	11,960	-	25,909	15,111	13,012	-	28,123
Utilities	-	39,634	-	39,634	-	6,726	-	6,726	-	6,741	-	6,741
Total Fixed Income	102,863	783,718	43,512	930,093	15,980	141,560	19,343	176,883	17,262	139,242	11,274	167,778
Derivatives												
Futures	(2,042)	-	-	(2,042)	(304)	-	-	(304)	(341)	-	-	(341)
Total Derivatives	(2,042)	-	-	(2,042)	(304)	-	-	(304)	(341)	-	-	(341)
Real Return												
Real Return	40,264	-	95	40,359	10,085	-	25	10,110	4,027	-	10	4,037
Total Real Return	40,264	-	95	40,359	10,085	-	25	10,110	4,027	-	10	4,037
Total Investments at Fair Value	1,197,035	783,718	158,683	2,139,436	374,465	141,560	60,095	576,120	195,367	139,242	27,231	361,840
Investments Measured at NAV												
Specialty Credit	-	-	-	420,006	-	-	-	115,042	-	-	-	57,080
Private Equity	-	-	-	162,337	-	-	-	63,245	-	-	-	17,235
Real Estate	-	-	-	179,034	-	-	-	50,564	-	-	-	21,466
Real Return	-	-	-	31,917	-	-	-	14,661	-	-	-	6,222
Fixed Income	-	-	-	20,167	-	-	-	3,018	-	-	-	3,371
Non US Equity	-	-	-	5,657	-	-	-	1,913	-	-	-	1,001
Emerging Markets	-	-	-	1,310	-	-	-	443	-	-	-	232
US Equity	-	-	-	6,196	-	-	-	2,133	-	-	-	1,018
Total Investments Measured at NAV	-	-	-	826,624	-	-	-	251,019	-	-	-	107,625
Cash and Accruals	-	-	-	555,975	-	-	-	71,670	-	-	-	118,042
Total Investments	$1,197,035	$783,718	$158,683	$3,522,035	$374,465	$141,560	$60,095	$898,809	$195,367	$139,242	$27,231	$587,507

Note: The fair value hierarchies do not reflect cash and accruals thus totals differ from the Investment Summaries.

Note: Cash Equivalents include publicly traded investment grade corporate bonds; variable rate demand notes; government and agency bonds; mortgages; municipal bonds; Short Term Investment Funds (STIF); money market funds or instruments (including, but not limited to, certificates of deposit, bank notes, deposit notes, bankers' acceptances and commercial paper); and repurchase agreements.

The investments measured at net asset value (NAV) are presented in the chart below:

Fair Value Measurements and Application (GASB 72) Pension
As of June 30, 2023 ($ in Thousands)

	CERS Nonhazardous				CERS Hazardous			
Asset Type	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Specialty Credit [1]	$1,255,568	$150,428	Daily - Quarterly	90 Days	$417,587	$50,178	Daily - Quarterly	90 Days
Real Estate [2]	545,935	132,577			173,707	41,887		
Real Return [3]	167,200	69,118	Daily	30 - 60 Days	54,268	26,345	Daily	30 - 60 Days
Private Equity [4]	694,388	192,519			232,064	62,173		
Fixed Income [5]	24,552	-	Daily		8,517	-	Daily	
Non US Equity [5]	20,497	-	Daily		7,110	-	Daily	
US Equity [5]	25,435	-	Daily		8,723	-	Daily	
Emerging Markets [5]	4,748	-	Daily		1,647	-	Daily	
Total Investments Measured at NAV	**$2,738,323**	**$544,642**			**$903,623**	**$180,583**		

[1] This type includes 13 high yield specialty credit managers with multiple strategies. These managers may invest in U.S. or non-U.S. investment grade corporate credit, U.S. or non U.S. non-investment grade corporate credit, including both bonds and bank loans, municipal bonds, non-U.S. sovereign debt, mortgages including residential mortgage backed securities, commercial mortgage backed securities and whole loans, asset-backed securities and emerging market debt.

[2] This type includes 12 real estate funds that invest primarily in U.S. commercial real estate; however, there is one manager who invests solely in non-U.S. commercial real estate. The fair value of the investments have been determined using the NAV per share of the Plan's ownership interest and in the partners' capital. Distributions from each fund will be received as the underlying investments of the funds are liquidated. It is expected that the funds will be liquidated over the next 7 to 10 years. Because it is not probable that any individual investment will be sold, the fair value of each individual investment has been determined using the NAV per share of the Plan's ownership interest in the partners' capital. Due to restrictions in the contract, redemptions are not likely until the assets of the fund are liquidated.

[3] This type includes 11 real return managers that invest in multiple strategies such as infrastructure, agriculture, royalties, commodities, and natural resources. These investments are intended to provide both favorable risk-adjusted returns and correlation with inflation to help with the hedging of inflation for the broader plan. This group of managers also includes any hedge fund managers remaining in the portfolio which have all been terminated and are only awaiting payouts.

[4] This type includes 35 managers with multiple strategies. These investments cannot be redeemed. Instead, the investments are redeemed throughout the life of the investment. Distributions are received through the liquidation of the underlying assets of the fund. It is expected that each fund will remain invested for a period of 5 to 10 years. It is probable that all of the investments in this type will be sold at an amount different from the NAV per share of the Plan's ownership interest in partners' capital. Therefore, the fair values of the investment in this asset class have been determined using recent observable transaction information.

[5] This type includes short-term commingled investment instruments issued by the US Government, Federal agencies, sponsored agencies or sponsored corporations.

The investments measured at net asset value (NAV) are presented in the chart below:

Fair Value Measurements and Application (GASB 72) Pension
As of June 30, 2023 ($ in Thousands)

	KERS Nonhazardous				KERS Hazardous				SPRS			
Asset Type	**Fair Value**	**Unfunded Commitments**	**Redemption Frequency**	**Redemption Notice Period**	**Fair Value**	**Unfunded Commitments**	**Redemption Frequency**	**Redemption Notice Period**	**Fair Value**	**Unfunded Commitments**	**Redemption Frequency**	**Redemption Notice Period**
Specialty Credit [1]	$420,006	$42,235	Daily - Quarterly	90 Days	$115,042	$14,009	Daily - Quarterly	90 Days	$57,080	$4,514	Daily - Quarterly	90 Days
Real Estate [2]	179,034	38,325			50,564	11,991			21,466	4,956		
Real Return [3]	31,917	22,648	Daily	30 - 60 Days	14,661	3,212	Daily	30 - 60 Days	6,222	5,897	Daily	30 - 60 Days
Private Equity [4]	162,337	37,797			63,245	16,422			17,235	4,884		
Fixed Income [5]	20,167	-	Daily		3,018	-	Daily		3,371	-	Daily	
Non US Equity [5]	5,657	-	Daily		1,913	-	Daily		1,001	-	Daily	
Emerging Markets [5]	1,310	-	Daily		443	-	Daily		232	-	Daily	
US Equity [5]	6,196	-	Daily		2,133	-	Daily		1,018	-	Daily	
Total Investments Measured at NAV	**$826,624**	**$141,005**			**$251,019**	**$45,634**			**$107,625**	**$20,251**		

[1] This type includes 13 high yield specialty credit managers with multiple strategies. These managers may invest in U.S. or non-U.S. investment grade corporate credit, U.S. or non U.S. non-investment grade corporate credit, including both bonds and bank loans, municipal bonds, non-U.S. sovereign debt, mortgages including residential mortgage backed securities, commercial mortgage backed securities and whole loans, asset-backed securities and emerging market debt.

[2] This type includes 12 real estate funds that invest primarily in U.S. commercial real estate; however, there is one manager who invests solely in non-U.S. commercial real estate. The fair value of the investments have been determined using the NAV per share of the Plan's ownership interest and in the partners' capital. Distributions from each fund will be received as the underlying investments of the funds are liquidated. It is expected that the funds will be liquidated over the next 7 to 10 years. Because it is not probable that any individual investment will be sold, the fair value of each individual investment has been determined using the NAV per share of the Plan's ownership interest in the partners' capital. Due to restrictions in the contract, redemptions are not likely until the assets of the fund are liquidated.

[3] This type includes 11 real return managers that invest in multiple strategies such as infrastructure, agriculture, royalties, commodities, and natural resources. These investments are intended to provide both favorable risk-adjusted returns and correlation with inflation to help with the hedging of inflation for the broader plan. This group of managers also includes any hedge fund managers remaining in the portfolio which have all been terminated and are only awaiting payouts.

[4] This type includes 35 managers with multiple strategies. These investments cannot be redeemed. Instead, the investments are redeemed throughout the life of the investment. Distributions are received through the liquidation of the underlying assets of the fund. It is expected that each fund will remain invested for a period of 5 to 10 years. It is probable that all of the investments in this type will be sold at an amount different from the NAV per share of the Plan's ownership interest in partners' capital. Therefore, the fair values of the investment in this asset class have been determined using recent observable transaction information.

[5] This type includes short-term commingled investment instruments issued by the US Government, Federal agencies, sponsored agencies or sponsored corporations.

Fair Value Measurements and Application (GASB 72) Insurance
As of June 30, 2023 ($ in Thousands)

	CERS Nonhazardous			Total	CERS Hazardous			Total
	Level				Level			
Asset Type	1	2	3	Fair Value	1	2	3	Fair Value
Public Equity								
Emerging Markets	$63,601	$-	$-	**$63,601**	$31,165	$-	$-	**$31,165**
US Equity	977,621	-	-	**977,621**	485,287	-	-	**485,287**
Non-US Equity	387,713	-	-	**387,713**	189,980	-	-	**189,980**
Total Public Equity	**1,428,935**	**-**	**-**	**1,428,935**	**706,432**	**-**	**-**	**706,432**
Fixed Income								
Agencies	197	628	-	**825**	90	286	-	**376**
Asset-Backed	-	62,606	-	**62,606**	-	28,399	-	**28,399**
Bank & Finance	-	63,438	50,686	**114,124**	-	28,579	19,772	**48,351**
Cash & Cash Equivalent	4,936	5,726	-	**10,662**	2,249	2,606	-	**4,855**
Corporate	552	215,180	1,158	**216,890**	240	90,053	515	**90,808**
Healthcare	-	10,450	-	**10,450**	-	4,575	-	**4,575**
Insurance	-	1,793	-	**1,793**	-	797	-	**797**
Mortgage-backed securities	-	-	-	**-**	-	-	-	**-**
Municipals	-	21,754	-	**21,754**	-	9,820	-	**9,820**
Sovereign Debt	-	11,274	-	**11,274**	-	4,904	-	**4,904**
US Government	40,447	39,550	-	**79,997**	18,383	17,986	-	**36,369**
Total Fixed Income	**46,132**	**432,399**	**51,844**	**530,375**	**20,962**	**188,005**	**20,287**	**229,254**
Derivatives								
Futures	(902)	-	-	**(902)**	(410)	-	-	**(410)**
Total Derivatives	**(902)**	**-**	**-**	**(902)**	**(410)**	**-**	**-**	**(410)**
Real Return								
Real Return	26,908	-	-	**26,908**	13,867	-	-	**13,867**
Total Real Return	**26,908**	**-**	**-**	**26,908**	**13,867**	**-**	**-**	**13,867**
Total Investments at Fair Value	**1,501,073**	**432,399**	**51,844**	**1,985,316**	**740,851**	**188,005**	**20,287**	**949,143**
Investments Measured at NAV								
Specialty Credit	-	-	-	**459,238**	-	-	-	**246,881**
Private Equity	-	-	-	**273,481**	-	-	-	**153,655**
Real Estate	-	-	-	**196,683**	-	-	-	**107,911**
Real Return	-	-	-	**51,674**	-	-	-	**27,545**
Fixed Income	-	-	-	**7,551**	-	-	-	**3,440**
Non US Equity	-	-	-	**213,696**	-	-	-	**106,177**
Emerging Markets	-	-	-	**1,865**	-	-	-	**914**
US Equity	-	-	-	**9,664**	-	-	-	**4,884**
Total Investments Measured at NAV	**-**	**-**	**-**	**1,213,852**	**-**	**-**	**-**	**651,407**
Cash and Accruals	**-**	**-**	**-**	**75,771**	**-**	**-**	**-**	**5,490**
Total Investments	**$1,501,073**	**$432,399**	**$51,844**	**$3,274,939**	**$740,851**	**$188,005**	**$20,287**	**$1,606,040**

Note: Cash Equivalents include publicly traded investment grade corporate bonds; variable rate demand notes; government and agency bonds; mortgages; municipal bonds; Short Term Investment Funds (STIF); money market funds or instruments (including, but not limited to, certificates of deposit, bank notes, deposit notes, bankers' acceptances and commercial paper); and repurchase agreements.

Fair Value Measurements and Application (GASB 72) Insurance
As of June 30, 2023 ($ in Thousands)

	KERS Nonhazardous			Total	KERS Hazardous			Total	SPRS			Total
	Level				Level				Level			
Asset Type	**1**	**2**	**3**	**Fair Value**	**1**	**2**	**3**	**Fair Value**	**1**	**2**	**3**	**Fair Value**
Public Equity												
Emerging Markets	$28,644	$-	$-	**$28,644**	$11,214	$-	$-	**$11,214**	$4,700	$-	$-	$4,700
US Equity	385,831	-	-	**385,831**	161,396	-	-	**161,396**	65,614	-	-	**65,614**
Non-US Equity	174,614	-	-	**174,614**	68,358	-	-	**68,358**	28,654	-	-	**28,654**
Total Public Equity	**589,089**	**-**	**-**	**589,089**	**240,968**	**-**	**-**	**240,968**	**98,968**	**-**	**-**	**98,968**
Fixed Income												
Agencies	104	329	-	**433**	44	140	-	**184**	17	54	-	**71**
Asset-Backed	-	33,205	-	**33,205**	-	13,684	-	**13,684**	-	5,324	-	**5,324**
Bank & Finance	-	33,301	39,480	**72,781**	-	13,665	10,181	**23,846**	-	5,372	3,889	**9,261**
Cash & Cash Equivalent	2,589	2,994	-	**5,583**	1,098	1,257	-	**2,355**	421	489	-	**910**
Corporate	229	118,023	633	**118,885**	10	38,859	232	**39,101**	52	17,350	98	**17,500**
Healthcare	-	5,462	-	**5,462**	-	1,904	-	**1,904**	-	881	-	**881**
Insurance	-	922	-	**922**	-	340	-	**340**	-	153	-	**153**
Mortgage-backed securities	-	-	-	**-**	-	-	-	**-**	-	-	-	**-**
Municipals	-	11,144	-	**11,144**	-	4,200	-	**4,200**	-	1,878	-	**1,878**
Sovereign Debt	-	4,708	-	**4,708**	-	277	-	**277**	-	1,055	-	**1,055**
US Government	20,994	20,583	-	**41,577**	8,589	8,500	-	**17,089**	3,466	3,385	-	**6,851**
Total Fixed Income	**23,916**	**230,671**	**40,113**	**294,700**	**9,741**	**82,826**	**10,413**	**102,980**	**3,956**	**35,941**	**3,987**	**43,884**
Derivatives												
Futures	(476)	-	-	**(476)**	(202)	-	-	**(202)**	(77)	-	-	**(77)**
Total Derivatives	**(476)**	**-**	**-**	**(476)**	**(202)**	**-**	**-**	**(202)**	**(77)**	**-**	**-**	**(77)**
Real Return												
Real Return	11,905	-	-	**11,905**	5,444	-	-	**5,444**	2,125	-	-	**2,125**
Total Real Return	**11,905**	**-**	**-**	**11,905**	**5,444**	**-**	**-**	**5,444**	**2,125**	**-**	**-**	**2,125**
Total Investments at Fair Value	**624,434**	**230,671**	**40,113**	**895,218**	**255,951**	**82,826**	**10,413**	**349,190**	**104,972**	**35,941**	**3,987**	**144,900**
Investments Measured at NAV												
Specialty Credit	-	-	-	**177,828**	-	-	-	**103,315**	-	-	-	**37,223**
Private Equity	-	-	-	**96,192**	-	-	-	**55,107**	-	-	-	**24,386**
Real Estate	-	-	-	**60,926**	-	-	-	**45,368**	-	-	-	**17,319**
Real Return	-	-	-	**18,622**	-	-	-	**11,104**	-	-	-	**4,091**
Fixed Income	-	-	-	**3,960**	-	-	-	**1,679**	-	-	-	**644**
Non US Equity	-	-	-	**52,287**	-	-	-	**29,313**	-	-	-	**10,097**
Emerging Markets	-	-	-	**840**	-	-	-	**329**	-	-	-	**137**
US Equity	-	-	-	**3,598**	-	-	-	**1,543**	-	-	-	**625**
Total Investments Measured at NAV	**-**	**-**	**-**	**414,253**	**-**	**-**	**-**	**247,758**	**-**	**-**	**-**	**94,522**
Cash and Accruals	**-**	**-**	**-**	**142,787**	**-**	**-**	**-**	**19,031**	**-**	**-**	**-**	**6,412**
Total Investments	**$624,434**	**$230,671**	**$40,113**	**$1,452,258**	**$255,951**	**$82,826**	**$10,413**	**$615,979**	**$104,972**	**$35,941**	**$3,987**	**$245,834**

Note: The fair value hierarchies do not reflect cash and accruals thus totals differ from the Investment Summaries.

Note: Cash Equivalents include publicly traded investment grade corporate bonds; variable rate demand notes; government and agency bonds; mortgages; municipal bonds; Short Term Investment Funds (STIF); money market funds or instruments (including, but not limited to, certificates of deposit, bank notes, deposit notes, bankers' acceptances and commercial paper); and repurchase agreements.

The investments measured at net asset value (NAV) are presented in the chart below:

Fair Value Measurements and Application (GASB 72) Insurance
As of June 30, 2023 ($ in Thousands)

	CERS Nonhazardous				CERS Hazardous			
Asset Type	**Fair Value**	**Unfunded Commitments**	**Redemption Frequency**	**Redemption Notice Period**	**Fair Value**	**Unfunded Commitments**	**Redemption Frequency**	**Redemption Notice Period**
Specialty Credit [1]	$459,238	$51,167	Daily - Quarterly	90 Days	$246,881	$27,542	Daily - Quarterly	90 Days
Real Estate [2]	196,683	48,780			107,911	26,717		
Real Return [3]	51,674	34,994	Daily	30 - 60 Days	27,545	12,901	Daily	30 - 60 Days
Private Equity [4]	273,481	89,782			153,655	48,867		
Fixed Income [5]	7,551	-	Daily		3,440	-	Daily	
Non US Equity [5]	213,696	-	Daily		106,177	-	Daily	
Emerging Markets [5]	1,865		Daily		914		Daily	
US Equity [5]	9,664	-	Daily		4,884	-	Daily	
Total Investments Measured at NAV	**$1,213,852**	**$224,723**			**$651,407**	**$116,027**		

[1] This type includes 13 high yield specialty credit managers with multiple strategies. These managers may invest in U.S. or non-U.S. investment grade corporate credit, U.S. or non U.S. non-investment grade corporate credit, including both bonds and bank loans, municipal bonds, non-U.S. sovereign debt, mortgages including residential mortgage backed securities, commercial mortgage backed securities and whole loans, asset-backed securities and emerging market debt.

[2] This type includes 12 real estate funds that invest primarily in U.S. commercial real estate; however, there is one manager who invests solely in non-U.S. commercial real estate. The fair value of the investments have been determined using the NAV per share of the Plan's ownership interest and in the partners' capital. Distributions from each fund will be received as the underlying investments of the funds are liquidated. It is expected that the funds will be liquidated over the next 7 to 10 years. Because it is not probable that any individual investment will be sold, the fair value of each individual investment has been determined using the NAV per share of the Plan's ownership interest in the partners' capital. Due to restrictions in the contract, redemptions are not likely until the assets of the fund are liquidated.

[3] This type includes 11 real return managers that invest in multiple strategies such as infrastructure, agriculture, royalties, commodities, and natural resources. These investments are intended to provide both favorable risk-adjusted returns and correlation with inflation to help with the hedging of inflation for the broader plan. This group of managers also includes any hedge fund managers remaining in the portfolio which have all been terminated and are only awaiting payouts.

[4] This type includes 35 managers with multiple strategies. These investments cannot be redeemed. Instead, the investments are redeemed throughout the life of the investment. Distributions are received through the liquidation of the underlying assets of the fund. It is expected that each fund will remain invested for a period of 5 to 10 years. It is probable that all of the investments in this type will be sold at an amount different from the NAV per share of the Plan's ownership interest in partners' capital. Therefore, the fair values of the investment in this asset class have been determined using recent observable transaction information.

[5] This type includes short-term commingled investment instruments issued by the US Government, Federal agencies, sponsored agencies or sponsored corporations.

The investments measured at net asset value (NAV) are presented in the chart below:

Fair Value Measurements and Application (GASB 72) Insurance
As of June 30, 2023 ($ in Thousands)

	KERS Nonhazardous				KERS Hazardous				SPRS			
Asset Type	**Fair Value**	**Unfunded Commitments**	**Redemption Frequency**	**Redemption Notice Period**	**Fair Value**	**Unfunded Commitments**	**Redemption Frequency**	**Redemption Notice Period**	**Fair Value**	**Unfunded Commitments**	**Redemption Frequency**	**Redemption Notice Period**
Specialty Credit [1]	$177,828	$19,647	Daily - Quarterly	90 Days	$103,315	$11,313	Daily - Quarterly	90 Days	$37,223	$4,186	Daily - Quarterly	90 Days
Real Estate [2]	60,926	15,082			45,368	11,274			17,319	4,299		
Real Return [3]	18,622	15,410	Daily	30 - 60 Days	11,104	2,621	Daily	30 - 60 Days	4,091	1,359	Daily	30 - 60 Days
Private Equity [4]	96,192	18,026			55,107	16,208			24,386	7,407		
Fixed Income [5]	3,960	-	Daily		1,679	-	Daily		644	-	Daily	
Non US Equity [5]	52,287	-	Daily		29,313	-	Daily		10,097	-	Daily	
Emerging Markets [5]	840	-	Daily		329	-	Daily		137	-	Daily	
US Equity [5]	3,598	-	Daily		1,543	-	Daily		625	-	Daily	
Total Investments Measured at NAV	**$414,253**	**$68,165**			**$247,758**	**$41,416**			**$94,522**	**$17,251**		

[1] This type includes 13 high yield specialty credit managers with multiple strategies. These managers may invest in U.S. or non-U.S. investment grade corporate credit, U.S. or non U.S. non-investment grade corporate credit, including both bonds and bank loans, municipal bonds, non-U.S. sovereign debt, mortgages including residential mortgage backed securities, commercial mortgage backed securities and whole loans, asset-backed securities and emerging market debt.

[2] This type includes 12 real estate funds that invest primarily in U.S. commercial real estate; however, there is one manager who invests solely in non-U.S. commercial real estate. The fair value of the investments have been determined using the NAV per share of the Plan's ownership interest and in the partners' capital. Distributions from each fund will be received as the underlying investments of the funds are liquidated. It is expected that the funds will be liquidated over the next 7 to 10 years. Because it is not probable that any individual investment will be sold, the fair value of each individual investment has been determined using the NAV per share of the Plan's ownership interest in the partners' capital. Due to restrictions in the contract, redemptions are not likely until the assets of the fund are liquidated.

[3] This type includes 11 real return managers that invest in multiple strategies such as infrastructure, agriculture, royalties, commodities, and natural resources. These investments are intended to provide both favorable risk-adjusted returns and correlation with inflation to help with the hedging of inflation for the broader plan. This group of managers also includes any hedge fund managers remaining in the portfolio which have all been terminated and are only awaiting payouts.

[4] This type includes 35 managers with multiple strategies. These investments cannot be redeemed. Instead, the investments are redeemed throughout the life of the investment. Distributions are received through the liquidation of the underlying assets of the fund. It is expected that each fund will remain invested for a period of 5 to 10 years. It is probable that all of the investments in this type will be sold at an amount different from the NAV per share of the Plan's ownership interest in partners' capital. Therefore, the fair values of the investment in this asset class have been determined using recent observable transaction information.

[5] This type includes short-term commingled investment instruments issued by the US Government, Federal agencies, sponsored agencies or sponsored corporations.

Money-Weighted Rates of Return

In accordance with GASB *Statement No. 67, Financial Reporting for Pension Plans*, and GASB *Statement No. 74, Financial Reporting for Post-Employment Benefit Plans Other than Pension Plans*, KPPA provides this additional disclosure regarding its money-weighted rate of return for the period of June 30, 2023. The money-weighted rate of return is a method of calculating period-by-period returns on the Pension and Insurance Funds' investments that adjusts for the changing amounts actually invested. For the purposes of this Statement, money-weighted rate of return is calculated as the internal rate of return on investments, net of investment expenses, then adjusted for the changing amounts actually invested.

Money-Weighted Rates of Return As of June 30 - Pension

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
2023	10.25%	10.35%	7.07%	9.46%	7.53%

Money-Weighted Rates of Return As of June 30 - Insurance

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
2023	10.32%	10.06%	9.89%	9.26%	9.44%

Note E. Securities Lending Transactions

Kentucky Revised Statutes 61.650 and 386.020(2) permit the Pension and Insurance Trust Funds to lend their securities to broker-dealers and other entities. KPPA utilizes a securities lending program to temporarily lend securities to qualified agents in exchange for either cash collateral or other securities with an initial fair value of 102% or 105% of the value of the borrowed securities. The borrowers of the securities simultaneously agree to return the borrowed securities in exchange for the collateral. The types of securities lent include U.S. Treasuries, U.S. Agencies, U.S. Corporate Bonds, U.S. Equities, Global Fixed Income Securities, and Global Equities Securities. Securities Lending transactions are accounted for in accordance with GASB 28. The net earnings for the Pension and Insurance Trust Funds was $1.7 million and $0.7 million, respectively.

The IPS does not address any restrictions on the amount of loans that can be made. As of June 30, 2023, KPPA had no credit risk exposure to borrowers because the collateral amounts received exceeded the amounts out on loan. The contracts with the custodial bank require them to indemnify KPPA if the borrowers fail to return the securities and one or both of the custodial banks have failed to live up to their contractual responsibilities relating to the lending of securities.

All securities loans can be terminated on demand by either party to the transaction. BNY Mellon invests cash collateral as permitted by state statute and Board policy. The agent, BNY Mellon, of the Funds cannot pledge or sell collateral securities received unless the borrower defaults. KPPA maintains a conservative approach to investing the cash collateral with BNY Mellon, emphasizing capital preservation, liquidity, and credit quality.

Cash collateral is invested in guaranteed, short-term obligations of the U.S. government, select government agencies and repurchase agreements with qualified agents. KPPA cannot pledge or sell collateral securities received unless the borrower defaults. BNY Mellon as the lending agent also indemnifies KPPA from any financial loss associated with a borrower’s default and collateral inadequacy.

As of June 30, 2023, the average days to maturity for loans was one day, and the weighted average investment maturity of cash collateral investments was one day. The trusts had no credit risk exposure to borrowers because the amounts owed to borrowers exceeded the amounts the borrowers owed the trust, and no losses resulted during the period.

Security lending programs can entail interest rate risk and credit risk. KPPA minimizes interest rate risk by limiting the term of cash collateral investments to several days. The credit risk is controlled by investing cash collateral in securities with qualities similar to the credit worthiness of lent securities.

As of June 30, 2023, the cash collateral received for the securities on loan for the Pension and Insurance Trust Funds was $339.0 million and $131.0 million, respectively. The securities non-cash collateral received a total of $142.8 million and $64.6 million, respectively. The collateral volume of the total underlying securities was $481.8 million for Pension and $195.6 million for the Insurance Trust Funds, respectively.

Securities Lending Cash Collateral
As of June 30, 2023

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS	Pension Total 2023
Pension	$176,126	$60,803	$71,804	$18,277	$12,028	$339,038
Insurance	$59,513	$29,266	$26,420	$11,270	$4,491	$130,960

Note F. Risk of Loss

KPPA is exposed to various risks of loss related to torts; thefts of, damage to, and destruction of assets; errors and omissions; injuries to employees; and natural disasters. Under the provisions of the Kentucky Revised Statutes the Office of Claims and Appeals is vested with full power and authority to investigate, hear proof, and compensate persons for damages sustained to either person or property as a result of negligence of the agency or any of its employees. Awards are limited to $250,000 for a single claim and $400,000 in aggregate per occurrence. Awards and a pro rata share of the operating cost of the Office of Claims and Appeals are paid from the fund of the agency having a claim or claims before the Office of Claims and Appeals.

Claims against the CERS Board, KRS Board and the KPPA Board, or any of its staff as a result of an actual or alleged breach of fiduciary duty, are self-insured effective May 26, 2019.

Claims for job-related illnesses or injuries to employees are insured by the state's self-insured workers' compensation program. Payments approved by the program are not subject to maximum limitations. All medical expenses related to a work injury or illness are paid based upon appropriate statutory and regulatory reductions, and up to 66.67% of wages for temporary disability. Each agency pays premiums based on fund reserves and payroll. Settlements did not exceed insurance coverage in any of the past three fiscal years. Thus, no secondary insurance had to be utilized. There were no claims which were appealed to the Kentucky Workers' Compensation Board.

Note G. Contingencies

In the normal course of business, KPPA is involved in litigation concerning the right of participants, or their beneficiaries, to receive benefits. KPPA does not anticipate any material losses for CERS, KERS, SPRS or the Insurance Fund as a result of the contingent liabilities. KPPA is involved in other litigation; therefore, please see Note O. Litigation, for further information.

Note H. Defined Benefit Pension Plan

KPPA is an agency within the Executive branch of the Commonwealth of Kentucky. All regular full-time employees in nonhazardous positions of any Kentucky State Department, Board, or Agency are directed by Executive Order (EO) to participate in KERS. These employees participate in KERS Nonhazardous, a cost-sharing, multiple-employer defined pension fund that provides retirement, disability, and death benefits to fund members. Fund benefits are extended to beneficiaries of fund members under certain circumstances. Tier 1 Fund members contributed 5% of creditable compensation for the fiscal year ended June 30, 2023. Tier 2 and Tier 3 Fund members contributed 6% of creditable compensation for the fiscal year ended June 30, 2023.

The chart below includes the covered payroll and contribution amounts for the employees of KPPA:

Payroll and Contributions as of June 30, 2023 ($ in Thousands)	
Covered Payroll	$15,947
Required Employer Contributions	$1,590
Employer Percentage Contributed	100.00%

Note: KRS 61.565, as amended by the 2021 Regular Legislative Session House Bill 8, requires the employers to contribute a normal cost for retirement plus and actuarially determined unfunded liability contribution. The Office of the State Budget Director determined the percentage of the contribution for FY 2023 for the Excutive Branch to be 68.03% for the actuarially determined unfunded liability and 9.97% for the normal cost.

Note I. Income Tax Status

The Internal Revenue Service (IRS) has ruled that plans administered by KPPA qualify under Section 401(a) of the Internal Revenue Code are, generally, not subject to tax. The plans are subject to income tax on any unrelated business income (UBI).

Note J. Equipment

Equipment as of June 30, 2023 ($ in Thousands)	
Equipment, cost	$2,885
Less Accumulated Depreciation	(2,885)
Equipment, net	$0

Note K. Intangible Assets

The provisions of GASB *Statement No. 51, Accounting and Financial Reporting for Intangible Assets*, requires that intangible assets be recognized in the Combining Statement of Fiduciary Net Position only if they are considered identifiable. In accordance with the Statement, KPPA has capitalized software costs as indicated below for the Strategic Technology Advancements for the Retirement of Tomorrow (START) project.

Software Expenses as of June 30 2023 ($ in Thousands)	
Software, cost	$17,302
Less Accumulated Amortization	(17,302)
Intangible Assets, net	$0

Note L. Actuarial Valuation

KPPA's actuary, Gabriel, Roeder, Smith & Co. (GRS), completed the actuarial valuation for the calculation of the employer contribution rates for the CERS, KERS, SPRS and Insurance Fund for the period ended June 30, 2023. The last experience study was conducted with experience through June 30, 2022, adopted by the Board of Trustees on June 5, 2023 for first use in this actuarial valuation.

Economic Assumptions - Pension as of June 30

	CERS				KERS				SPRS	
	Nonhazardous		Hazardous		Nonhazardous		Hazardous			
	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022
Assumed Investment Return	6.50%	6.25%	6.50%	6.25%	5.25%	5.25%	6.25%	6.25%	5.25%	5.25%
Inflation Factor	2.50%	2.30%	2.50%	2.30%	2.50%	2.30%	2.50%	2.30%	2.50%	2.30%
Payroll Growth	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Economic Assumptions - Insurance as of June 30

	CERS				KERS				SPRS	
	Nonhazardous		Hazardous		Nonhazardous		Hazardous			
	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022
Assumed Investment Return	6.50%	6.25%	6.50%	6.25%	6.50%	6.25%	6.50%	6.25%	6.50%	6.25%
Inflation Factor	2.50%	2.30%	2.50%	2.30%	2.50%	2.30%	2.50%	2.30%	2.50%	2.30%
Payroll Growth	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Note M. Financial Report for (GASB 67) Pension Plans and (GASB 74) Postemployment Benefit Plans

The following details actuarial information and assumptions utilized in determining the unfunded (overfunded) actuarial accrued liabilities for CERS, KERS, SPRS and Insurance Fund. Please note that calculations for TPL, net fiduciary position, NPL, total OPEB liability, net OPEB fiduciary position, and net OPEB liability are reported in the Plans' Required Supplementary Information (RSI) on pages 93-110 are based on June 30, 2022, actuarial valuations, rolled forward to June 30, 2023. The prior year valuations are used as the basis for the roll forward method and are applied to complete the current year pension and OPEB valuations as of the measurement date, June 30, 2023, in accordance with GASB *Statement No.67*, paragraph 37, and GASB *Statement No. 74*, paragraph 41.

Financial Report for Pension Plan (GASB 67)

Basis of Calculations

GRS completed reports by plan in compliance with GASB S*tatement No. 67 Financial Reporting for Pension Plans.* The TPL, NPL, and sensitivity information are based on an actuarial valuation date of June 30, 2022. The TPL was rolled forward from the valuation date to the Plans' fiscal year ended June 30, 2023, using generally accepted actuarial principles. Information disclosed for years prior to June 30, 2017, were prepared by KPPA's prior actuary. GRS will provide separate reports at a later date with additional accounting information determined in accordance with GASB *Statement No. 68, Accounting and Financial Reporting for Pensions.*

Assumptions

The CERS and KRS Board of Trustees adopted new actuarial assumptions on May 9, 2023 and June 5, 2023, respectively. Based on the June 30, 2021, actuarial valuation report, the actuarial methods and assumptions used to calculate these contributions rates are:

- Investment Return - 6.25% for CERS Nonhazardous, and CERS Hazardous, KERS Hazardous, 5.25% for KERS Nonhazardous and SPRS.
- Inflation - 2.30% for all plans.
- Salary Increases - 3.30% to 10.30% for CERS Nonhazardous, 3.55% to 19.05% for CERS Hazardous, 3.30% to 15.30% for KERS Nonhazardous, 3.55% to 20.05% for KERS Hazardous, and 3.55% to 16.05% for SPRS, varies by service.
- Payroll Growth - 2% for CERS Nonhazardous and Hazardous, 0% for KERS Nonhazardous and Hazardous, and SPRS.
- Mortality - System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.

Plan Provisions

House Bill 506 passed during the 2023 legislative session and reinstated the Partial Lump-Sum Optional Form of payment for members who retire on and after January 1, 2024, with the lump-sum payment options expanded to include 48 or 60 times the member's monthly retirement allowance.

Since this optional form of payment results in a reduced, actuarial equivalent, monthly retirement allowance for members who elect a partial lump-sum option, this provision does not have a fiscal impact to the total pension liability of any of the plans.

House Bill 506 also adjusted the minimum required separation period before a retiree may become reemployed and continue to receive their retirement allowance to one month for all circumstances for each plan. This is a minimal change for members in the KERS hazardous, CERS hazardous, and SPRS plans, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe this provision of House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members and therefore have reflected no fiscal impact to the total pension liability of the KERS hazardous, CERS hazardous, or SPRS plans.

Similarly, this is a relatively small change for future retirees in the KERS and CERS non-hazardous plans. But as the minimum separation period was previously three months in almost every circumstance, we have assumed that there would be a 1.0% increase in the rate of retirement for each of the first two years a non-hazardous member becomes retirement eligible under the age of 65, in order to reflect a shift in the retirement pattern. The total pension liability as of June 30, 2023 for the KERS non-hazardous and CERS non-hazardous plans is determined using these updated benefit provisions.

There have been no other plan provision changes that would materially impact the total pension liability since June 30, 2022. It is our opinion that these procedures for determining the information contained in these reports are reasonable, appropriate, and comply with applicable requirements under GASB No. 67.

Discount Rate

A single discount rate of 5.25% was used for the KERS Nonhazardous pension plan and SPRS pension plan, a single discount rate of 6.25% was used for the KERS Hazardous pension plan, and a single discount rate of 6.50% was used for the CERS Nonhazardous pension plan and CERS Hazardous pension plan to measure the total pension liability for the fiscal year ending June 30, 2023. The single discount rate for CERS Nonhazardous and CERS Hazardous increased by 0.25% from 6.25% in fiscal year 2022 to 6.50% in fiscal year 2023. These single discount rates were based on the expected rate of return on pension plan investments. Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the pension plan's fiduciary net position and future contributions were projected to be sufficient to finance all the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of the projected benefit payments to determine the total pension liability.

The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Except where noted below, future contributions are projected assuming that the entire actuarially determined employer contribution is received by each plan each future year, calculated in accordance with the current funding policy. The assumed future employer contributions for the CERS plans reflect the provisions of House Bill 362 (passed during the 2018 legislative session) which limit the increases to the employer contribution rates to 12% over the prior fiscal year through June 30, 2028.

Additional health care contributions (IRC 401(h) Subaccount)

Based on guidance issued by GASB in connection with GASB *Statement No. 74*, the 1% of pay member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered as an Other Post Employment Benefit (OPEB) asset. As a result, the reported pension fiduciary net positions as of June 30, 2017, and later are net of the 401(h) asset balance.

Additional Disclosures

These reports are based upon information furnished to us by the Kentucky Public Pensions Authority (KPPA), which includes benefit provisions, membership information, and financial data. We did not audit this data and information, but we did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KPPA. Please see the "Actuarial Valuation Report as of June 30, 2022" for each system and the reports titled "2022 Actuarial Experience Study for the Period Ending June 30, 2022" for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for the fiscal year ending June 30, 2023.

Financial Reporting for Postemployment Benefit Plans (GASB 74)

GRS completed reports by plan in compliance with GASB S*tatement No. 74*, *Financial Reporting for Postemployment Benefit Plans Other than Pension Plans* for the fiscal year ended June 30, 2023. GRS will provide separate reports at a later date with additional accounting information determined in accordance with GASB *Statement No. 75*, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions.*

Basis of Calculations

The total OPEB liability, net OPEB liability (NOL), and sensitivity information are based on an actuarial valuation date of June 30, 2022. The total OPEB liability was rolled forward from the valuation date to the plan's fiscal year ended June 30, 2023, using generally accepted actuarial principles.

Assumptions

The discount rates used to calculate the total OPEB liability increased for each fund since the prior year (see further discussion on the calculation of the single discount rates later in this section). There were no other material assumption changes and it is GRS' opinion that these procedures are reasonable and appropriate, and comply with applicable requirements under GASB No. 74.

The actuarially determined contribution rates effective for fiscal year ended 2023 that are documented in the schedules were calculated as of June 30, 2021. Based on the June 30, 2021, actuarial valuation reports the actuarial methods and assumptions used to calculate the required contributions are:

- Investment Return - 6.25%.
- Inflation - 2.30%.
- Salary Increases - 3.30% to 10.30% for CERS Nonhazardous, 3.55% to 19.05% for CERS Hazardous, 3.30% to 15.30% for KERS Nonhazardous, 3.55% to 20.05% for KERS Hazardous, 3.55% to 16.05% for SPRS, varies by service.
- Payroll Growth - 2.00% for CERS Nonhazardous and CERS Hazardous, 0.00% for KERS Nonhazardous, KERS Hazardous, and SPRS.
- Mortality - System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.
- Health Care Trend Rates:
  - Pre-65 - Initial trend starting at 6.30% on January 1, 2023, and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.
  - Post-65 - Initial trend starting at 6.30% on January 1, 2023, and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.

Plan Provisions

House Bill 506 passed during the 2023 legislative session and adjusted the minimum required separation period before a retiree may become reemployed to be one month for all circumstances for each plan. This is a minimal change for members in the KERS hazardous, CERS hazardous, and SPRS plans, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe this provision of House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members and therefore have reflected no fiscal impact to the total OPEB liability of the KERS hazardous, CERS hazardous, or SPRS plans. Similarly, this is a relatively small change for future retirees in the KERS and CERS non-hazardous plans. But as the minimum separation period was previously three months in almost every circumstance, we have assumed that there would be a 1.0% increase in the rate of retirement for each of the first two years a nonhazardous member becomes retirement eligible under the age of 65, in order to reflect a shift in the retirement pattern. The total OPEB liability as of June 30, 2023 for the KERS non-hazardous and CERS nonhazardous plans is determined using these updated benefit provisions. There were no other plan provision changes that would materially impact the total OPEB liability since June 30, 2022. It is our opinion that these procedures for determining the information contained in these reports are reasonable and appropriate, and comply with applicable requirements under GASB No. 74.

Implicit Employer Subsidy for non-Medicare retirees

The fully-insured premiums paid for the Kentucky Employees' Health Plan are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit employer subsidy for the non-Medicare eligible retirees. GASB No. 74 requires that the liability associated with this implicit subsidy be included in the calculation of the Total OPEB Liability.

Discount Rates

The following single discount rates were used to measure the total OPEB liability for the fiscal year ending June 30, 2023.

PLAN	FISCAL YEAR 2023	FISCAL YEAR 2022	CHANGE IN RATE
CERS Nonhazardous	5.93%	5.70%	0.23%
CERS Hazardous	5.97%	5.61%	0.36%
KERS Nonhazardous	5.94%	5.72%	0.22%
KERS Hazardous	5.94%	5.59%	0.35%
SPRS	6.02%	5.69%	0.33%

The single discount rates are based on the expected rate of return on OPEB plan investments of 6.50% and a municipal bond rate of 3.86%, as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2023. Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the plan's fiduciary net position and future contributions were projected to be sufficient to finance the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on insurance plan investments was applied to all periods of the projected benefit payments paid from the retirement system. However, the cost associated with the implicit employer subsidy is not currently being included in the calculation of the plan's actuarial determined contributions, and it is our understanding that any cost associated with the implicit subsidy will not be paid out of the plan's trust. Therefore, the municipal bond rate was applied to future expected benefit payments associated with the implicit subsidy.

The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Future contributions are projected assuming that the entire actuarially determined employer contribution is received by each plan each future year, calculated in accordance with the current funding policy.

Additional health care contributions (IRC 401(h) Subaccount)

Based on guidance issued by GASB in connection with GASB Statement No. 74, the 1% of pay member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered an OPEB asset. As a result, the reported fiduciary net position includes these 401(h) assets. Additionally, these member contributions and associated investment income and administrative expenses are included in the reconciliation of the fiduciary net position.

Additional Disclosures[1]

The reports are based upon information furnished to GRS by the KPPA, which includes benefit provisions, membership information, and financial data. GRS did not audit this data and information, but GRS applied a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KPPA. Please see the "Actuarial Valuation Report as of June 30, 2022" for each system and the report titled "2022 Actuarial Experience Study for the Period Ending June 30, 2022" for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for fiscal year ending June 30, 2023.

Target Asset Allocation

The long-term (10-year) expected rates of return were determined by using a building block method in which best estimated ranges of expected future real rates of return were developed for each asset class. The ranges were combined by weighting the expected future real rate of return by the target asset allocation percentage. The target allocation and best estimates of arithmetic real rate of return for each major asset class are summarized in the tables on the following page.

1 Note: Data and information regarding GASB 67 and GASB 74 reporting was provided by GRS Retirement Consulting.

Target Asset Allocation - CERS Pension and Insurance
As of June 30, 2023

Allocations apply to CERS Pension and Insurance Funds

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Equity		
Public Equity	50.00%	5.90%
Private Equity	10.00%	11.73%
Fixed Income		
Core Fixed Income	10.00%	2.45%
Specialty Credit	10.00%	3.65%
Cash	0.00%	1.39%
Inflation Protected		
Real Estate	7.00%	4.99%
Real Return	13.00%	5.15%

Target Asset Allocation - Pension
As of June 30, 2023

Allocations apply to KERS Nonhazardous and SPRS Pension Funds

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Equity		
Public Equity	32.50%	5.90%
Private Equity	7.00%	11.73%
Fixed Income		
Core Fixed Income	20.50%	2.45%
Specialty Credit	15.00%	3.65%
Cash	5.00%	1.39%
Inflation Protected		
Real Estate	10.00%	4.99%
Real Return	10.00%	5.15%

Target Asset Allocation - Pension and Insurance
As of June 30, 2023

Allocations apply to KERS Hazardous Pension and all KRS Insurance Funds

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Equity		
Public Equity	43.50%	5.90%
Private Equity	10.00%	11.73%
Fixed Income		
Core Fixed Income	10.00%	2.45%
Specialty Credit	15.00%	3.65%
Cash	1.50%	1.39%
Inflation Protected		
Real Estate	10.00%	4.99%
Real Return	10.00%	5.15%

NOTE: Minor deviations are expected between the actuarial assumed rate of return and the expected rate of return reported in the above charts. The actuarial assumed rates of return are based on a review of economic assumptions completed periodically as warranted but not longer than every 2 years; whereas, the expected rate of return is calculated annually for GASB purposes by taking the current asset allocation and applying the most relevant long term market expectations (March 2023) for each asset class.

Sensitivity of the NPL to Changes in the Discount Rate Fiscal Year 2023
As of June 30, 2023 ($ in Thousands)

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
	Current 6.50%	**Current 6.50%**	**Current 5.25%**	**Current 6.25%**	**Current 5.25%**
1% Decrease	$8,101,230	$3,404,287	$14,159,095	$580,511	$577,298
Current Discount Rate	6,416,509	2,695,956	12,318,726	422,988	448,299
1% Increase	$5,016,442	$2,117,409	$10,793,619	$295,371	$342,465

Sensitivity of the Net OPEB Liability to Changes in the Discount Rate and Healthcare Trend Rate
As of June 30, 2023 ($ in Thousands)

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
	Single 5.93%	**Single 5.97%**	**Single 5.94%**	**Single 5.94%**	**Single 6.02%**
Sensitivity of the Net OPEB Liability to Changes in the Discount Rate					
1% Decrease	$259,098	$346,027	$1,055,209	$(155,851)	$45,363
Single Discount Rate	(138,067)	136,823	784,592	(207,995)	15,341
1% Increase	$(470,644)	$(37,500)	$557,024	$(251,094)	$(9,776)
Sensitivity of the Net OPEB Liability to Changes in the Current Healthcare Cost Trend Rate					
1% Decrease	$(442,528)	$1,559	$575,159	$(239,711)	$(5,320)
Current Healthcare Cost Trend Rate	$(138,067)	136,823	784,592	(207,995)	15,341
1% Increase	$235,935	$300,182	$1,038,116	$(169,294)	$40,029

Development of Single Discount Rate for OPEB
As of June 30, 2023

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
2023					
Single Discount Rate	5.93%	5.97%	5.94%	5.94%	6.02%
Long-Term Expected Rate of Return	6.50%	6.50%	6.50%	6.50%	6.50%
Long-Term Municipal Bond Rate (1)	3.86%	3.86%	3.86%	3.86%	3.86%

Note: 1. Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2023.

Schedule of Employers' NPL - CERS Nonhazardous As of June 30, 2023 ($ in Thousands)	
Total Pension Liability (TPL)	$15,089,106
Plan Fiduciary Net Position	8,672,597
Net Pension Liability	$6,416,509
Ratio of Plan Fiduciary Net Position to TPL	57.48%
Covered Payroll [(1)]	$2,966,567
Net Pension Liability as a Percentage of Covered Payroll	216.29%

Schedule of Employers' NPL - CERS Hazardous As of June 30, 2023 ($ in Thousands)	
Total Pension Liability (TPL)	$5,731,148
Plan Fiduciary Net Position	3,035,192
Net Pension Liability	$2,695,956
Ratio of Plan Fiduciary Net Position to TPL	52.96%
Covered Payroll [(1)]	$714,837
Net Pension Liability as a Percentage of Covered Payroll	377.14%

Schedule of Employers' NPL - KERS Nonhazardous As of June 30, 2023 ($ in Thousands)	
Total Pension Liability (TPL)	$15,858,669
Plan Fiduciary Net Position	3,539,943
Net Pension Liability	$12,318,726
Ratio of Plan Fiduciary Net Position to TPL	22.32%
Covered Payroll [(1)]	$1,648,318
Net Pension Liability as a Percentage of Covered Payroll	747.35%

Schedule of Employers' NPL - KERS Hazardous As of June 30, 2023 ($ in Thousands)	
Total Pension Liability (TPL)	$1,316,521
Plan Fiduciary Net Position	893,533
Net Pension Liability	$422,988
Ratio of Plan Fiduciary Net Position to TPL	67.87%
Covered Payroll [(1)]	$223,922
Net Pension Liability as a Percentage of Covered Payroll	188.90%

Schedule of Employer's NPL - SPRS As of June 30, 2023 ($ in Thousands)	
Total Pension Liability (TPL)	$1,039,813
Plan Fiduciary Net Position	591,514
Net Pension Liability	$448,299
Ratio of Plan Fiduciary Net Position to TPL	56.89%
Covered Payroll [(1)]	$65,693
Net Pension Liability as a Percentage of Covered Payroll	682.42%

[(1)] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

Schedule of the Employers' Net OPEB Liability - CERS Nonhazardous
As of June 30, 2023 ($ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll [1]	Net OPEB Liability as a Percentage of Covered Payroll
2023	$3,260,308	$3,398,375	$(138,067)	104.23%	$2,982,960	(4.63)%

[1] Based on derived compensation using the provided employer contribution information.

Schedule of the Employers' Net OPEB Liability - CERS Hazardous
As of June 30, 2023 ($ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll [1]	Net OPEB Liability as a Percentage of Covered Payroll
2023	$1,771,015	$1,634,192	$136,823	92.27%	$719,666	19.01%

[1] Based on derived compensation using the provided employer contribution information.

Schedule of the Employers' Net OPEB Liability - KERS Nonhazardous
As of June 30, 2023 ($ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll [1]	Net OPEB Liability as a Percentage of Covered Payroll
2023	$2,317,344	$1,532,752	$784,592	66.14%	$1,653,492	47.45%

[1] Based on derived compensation using the provided employer contribution information.

Schedule of the Employers' Net OPEB Liability - KERS Hazardous
As of June 30, 2023 ($ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll [1]	Net OPEB Liability as a Percentage of Covered Payroll
2023	$417,361	$625,356	$(207,995)	149.84%	$223,922	(92.89)%

[1] Based on derived compensation using the provided employer contribution information. For 2021, 2022, and 2023, derived compensation based on pension contribution information, as there were no required employer contributions for the insurance fund for FYE 2021, FYE 2022, and FYE 2023.

Schedule of the Employer's Net OPEB Liability-SPRS Plan
As of June 30, 2023 ($ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll [1]	Net OPEB Liability as a Percentage of Covered Payroll
2023	$263,450	$248,109	$15,341	94.18%	$65,830	23.30%

[1] Based on derived compensation using the provided employer contribution information.

Note N. Pension Legislation

2023 Regular Session

The 2023 Regular Session of the Kentucky General Assembly adjourned on Thursday, March 30, 2023. Highlights of the 2023 Session include:

BILLS OF DIRECT INTEREST TO OUR MEMBERS AND RETIREES

House Bill 444: Pay Raise for Government Workers; Allocation to Conduct a Full Salary Classification Study for State Government

House Bill 444 provides a 6% raise for workers in all three branches of government, effective July 1, 2023. The bill also authorizes an additional $2,000 pay raise for all employees and elected officials in the Judicial Branch and allocates $500,000 to provide additional contractual resources for the Personnel Cabinet to complete a full salary classification study by November 1, 2023.

The General Assembly originally requested a full salary classification study from the executive branch in July 2021. However, the resulting study presented to the Interim Joint Committee on Appropriations and Revenue in July 2022 did not contain the level of detail that legislators said they needed to make informed decisions. Therefore, the General Assembly allocated money to hire an outside vendor with the industry experience and appropriate resources needed to perform such a complex study.

House Bill 506: Establish a Partial Lump Sum Option (PLSO) for retirees and reduce required break for employment after retirement

House Bill 506 establishes a Partial Lump Sum Option (PLSO), with and without survivor rights, as a payment option for retiring members of the County Employees Retirement System (CERS), Kentucky Employees Retirement System (KERS), or State Police Retirement System (SPRS).

State law previously offered a PLSO to members who retired on or before January 1, 2009. For retirement dates effective January 1, 2024 and after, members will again be allowed to choose a retirement payment option that offers a lump-sum payment equal to 12, 24, 36, 48 or 60 months of payments of the Basic/Annuity or Survivorship 100% payment options and a lifetime monthly benefit that is actuarially reduced to reflect the lump-sum payment.

The bill also changes the required break in service before a retiree may return to work with a participating employer and continue to receive their retirement allowance. Currently, in almost all reemployment situations, a three (3) calendar month break in service from the retired member's retirement date is required before returning to employment with a participating employer or their retirement benefit will be voided.

Under House Bill 506, the break in service is reduced to only one (1) month for retirees in most all reemployment situations. Prearranged agreements to return to employment with a participating employer made prior to a member's retirement date continue to be prohibited by law for all members. Additionally, all required forms must be completed if a retired member reemploys with a participating employer within twelve (12) months of their effective retirement date.

These changes take effect for retirement dates January 1, 2024 and after.

ADMINISTRATIVE BILLS FOR KPPA

House Bill 551: Legalize Sports Wagering in Kentucky and Create Wagering Administration Fund: Portion of Remaining Funds to go to KY Permanent Pension Fund

House Bill 551 legalizes sports wagering in Kentucky and creates the Wagering Administration Fund to pay for the administrative expenses involved with overseeing sports wagering activities. After administrative costs have been paid, a portion of any remaining funds in the Wagering Administration Fund will be deposited in the Kentucky Permanent Pension Fund established in Kentucky Revised Statutes 42.205. This fund was created in 2016 to address the Commonwealth's unfunded pension liabilities. Each system operated by KPPA is potentially eligible to receive funding from this account, if authorized by the General Assembly in an enacted biennial budget bill.

House Bill 587: Internal audit functions at KPPA

House Bill 587 requires the Kentucky Public Pensions Authority (KPPA) to appoint or contract for the services of an Internal Auditor who will report directly to the KPPA board. The Internal Auditor will be exempt from the hiring and employment provisions of Kentucky Revised Statutes Chapter 18A, Chapter 45A, and 64.640, and is authorized by the Authority to appoint employees under his or her direct supervision. The Internal Auditor will also have an annual performance review conducted by the Authority.

The Legislative Research Commission (LRC) did not request an Actuarial Analysis from KPPA for this bill; however, the Internal Auditor position has been in place at KPPA (the agency was then known as “Kentucky Retirement Systems”) since 2003 so there are no significant administrative cost increases expected.

House Bill 236: Fiduciary duties owed to the state-administered retirement systems

House Bill 236 amends Kentucky Revised Statutes 61.650 and 78.790 to stipulate that fiduciaries shall consider the sole interest of the systems’ members and beneficiaries using only factors with “… a direct and material connection to the financial risk or financial return of an investment.” In particular, the bill prohibits the consideration of environmental, social, and governance (ESG) interests in making investment decisions.

The bill also requires the CERS and KRS Boards to adopt proxy guidelines and ensure that all proxy votes are executed by either the Board or the Board’s designee in accordance with the Board’s proxy voting policy; or a proxy voting service that has acknowledged a fiduciary duty in writing and who commits to following the Board’s policy. Finally, House Bill 236 requires a report of proxy votes to be provided to the Boards at least once a quarter.

Because our systems are, and have always been, fiduciaries who are required to invest solely in the interest of our members and retirees, KPPA and the other state-administered retirement systems submitted Actuarial Analysis letters to the General Assembly that said there is no expected actuarial impact from this bill. However, the letters from each of the systems covered by this bill say there is an expected increase in administrative costs for each plan to cover the cost of compiling and reporting proxy votes on a quarterly basis.

State Senate Confirms Gubernatorial Appointments to KRS Board

State law requires that gubernatorial appointments to the KRS Board of Trustees receive Senate approval. On March 30, three (3) Senate Resolutions confirming Governor Andy Beshear’s recent appointments to the KRS board were unanimously adopted by a vote of 37-0:

1. **Senate Resolution 152**, sponsored by Senator Julie Raque Adams, confirmed the reappointment of E. Lynn Hampton to the Kentucky Retirement Systems Board of Trustees for a term expiring June 17, 2026;
2. **Senate Resolution 226**, sponsored by Senator Jimmy Higdon, confirmed the appointment of Ramsey Bova to the Kentucky Retirement Systems Board of Trustees for a term expiring June 17, 2026; and
3. **Senate Resolution 251**, sponsored by Senator Julie Raque Adams, confirmed the reappointment of William E. Summers V to the Kentucky Retirement Systems Board of Trustees for a term expiring June 17, 2026.

The Resolutions only required Senate confirmation and did not need to be adopted in the House.

Note O. Litigation

Seven Counties

Seven Counties Services, Inc. (Seven Counties) filed for Chapter 11 bankruptcy in the United States Bankruptcy Court for the Western District of Kentucky (the Bankruptcy Court) in April 2013. Seven Counties provides mental health services for the Cabinet for Health and Family Services for the greater Louisville, Kentucky area and surrounding counties. Seven Counties participated in KERS for approximately twenty-five years. Seven Counties identified KERS as a creditor with a primary objective of discharging its continuing obligation to remit retirement contributions for approximately 1,300 employees and to terminate its participation in KERS. If Seven Counties is successful in discharging its obligations to KERS, the estimated member pension and insurance actuarial accrued liability is in the range of $145 to $150 million.

KERS opposed Seven Counties' attempt to discharge its obligations and terminate its participation. KERS asserted that Seven Counties is a Governmental Unit properly participating in KERS by Executive Order issued in 1978 and thus ineligible for Chapter 11 relief. Consequently, Seven Counties would remain statutorily obligated to continue participation and remit contributions. On May 30, 2014, the Bankruptcy Court held that Seven Counties was not a Governmental Unit and could move forward with its Chapter 11 bankruptcy case. The Bankruptcy Court further held that Seven Counties' statutory obligation to participate in and remit contributions to KERS was a "contract" eligible for rejection. KRS appealed this decision.

On August 24, 2018, the U.S. Court of Appeals for the Sixth Circuit (the Sixth Circuit) issued a two to one Opinion affirming the decision that Seven Counties is eligible to file for bankruptcy under Chapter 11. However, the Sixth Circuit went on to state, "lacking state court precedent characterizing the nature of the relationship between Seven Counties and KERS, we certify that question to the Kentucky Supreme Court." KERS filed a petition to have the Opinion Reheard En Banc by the entire Sixth Circuit. On October 5, 2018, the Sixth Circuit issued an order holding the petition in abeyance pending a response from the Kentucky Supreme Court on the certified question of law. On November 1, 2018, the Supreme Court of Kentucky issued an Order granting certification of the question. The certified question of law was briefed by the parties and oral arguments were held before the Supreme Court of Kentucky on March 6, 2019. On August 29, 2019, the Supreme Court of Kentucky ruled that Seven Counties' participation in and its contributions to KERS are based on a statutory obligation. The Supreme Court of Kentucky's ruling was forwarded to the Sixth Circuit for further consideration.

On July 20, 2020, the Sixth Circuit Court of Appeals issued an Opinion stating that they affirmed their previous determination that Seven Counties was eligible to file a Chapter 11 bankruptcy case. The Sixth Circuit also reversed the conclusion that Seven Counties can reject its obligation to participate as an executory contract and that Seven Counties need not maintain its statutory contribution obligation during the pendency of the bankruptcy. The Sixth Circuit dismissed Seven Counties' cross appeal and remanded the case for further proceedings consistent with the opinion. KERS again filed a petition to have the Opinion regarding Seven Counties' ability to file a Chapter 11 bankruptcy Reheard En Banc by the entire Sixth Circuit. This petition was denied in an Order dated September 11, 2020. The case was remanded back to the Bankruptcy Court.

The parties were able to stipulate to the principal amount of Seven Counties unpaid employer contributions for the post-petition time-frame of April 6, 2014 through February 5, 2015. A limited hearing occurred in February 2022 regarding whether interest is applicable to the stipulated amount. The Bankruptcy Court entered an order that set the amount of the contributions, but did not order Seven Counties to pay that amount. The order was silent regarding the application of interest. Both Seven Counties and KERS appealed the Bankruptcy Court's order to the United States District Court where it will be joined with the pending appeal of the confirmation of Seven Counties' reorganization plan.

The United States District Court refused to hear the appeals stating that the Bankruptcy Court's order was not final and appealable. That left KERS in a position where no relief was possible; the Bankruptcy Court would not enter an order requiring payment, and the District Court would not hear an appeal. This forced KERS to once again appeal the United States Court of Appeals for the Sixth Circuit. The matter is now fully briefed before that court and parties are awaiting oral arguments.

Mayberry

In December 2017, certain members and beneficiaries of the Kentucky Retirement Systems filed litigation (Mayberry et al v. KKR et al) against certain Hedge Fund Sellers, Investment, Actuarial and Fiduciary Advisors, Annual Report Certifiers, and certain (past and present) Kentucky Retirement Systems' Trustees and Officers in Franklin Circuit Court. The litigation alleges (in summary) that actuarial assumptions, fees, statements and disclosures harmed the financial status of the Retirement Systems. While Kentucky Retirement Systems is designated a "Defendant," that designation is a technical formality in so much as Kentucky Retirement Systems is a "nominal defendant." On

April 20, 2018, the Kentucky Retirement Systems and the plaintiffs filed a joint notice with the Court advising that Kentucky Retirement Systems does not intend to challenge its status as a “nominal defendant.” Since then, the Franklin Circuit Court ruled on various Defendants’ Motions to Dismiss, denying nearly all of them. On January 10, 2019, KKR, Henry Kravis and George Roberts (collectively, “KKR Parties”) amended their Answer to assert cross claims against Kentucky Retirement Systems. Certain Officer and Trustee Defendants appealed the denial of their Motion to Dismiss on immunity grounds to the Court of Appeals, and that appeal was transferred to the Kentucky Supreme Court. The hedge fund defendants filed a Petition for Writ of Prohibition in the Court of Appeals, arguing the Plaintiffs lacked standing to bring the action. That Petition was granted on April 23, 2019. Plaintiffs promptly appealed the Court of Appeals’ decision to the Supreme Court of Kentucky. On July 9, 2020, the Supreme Court of Kentucky issued an Opinion stating that the plaintiffs, as beneficiaries of a defined-benefit plan who have received all of their vested benefits so far and are legally entitled to receive their benefits for the rest of their lives, do not have a concrete stake in this case and therefore lack standing to bring this claim. The case was remanded to the circuit court with directions to dismiss the complaint. Thereafter, plaintiffs filed a motion seeking to amend their complaint to add parties (Tier 3 members of the Retirement Systems) and claims that would purportedly correct the standing defect identified by the Supreme Court of Kentucky. Furthermore, the Attorney General of the Commonwealth of Kentucky sought leave to intervene in this action through a motion filed July 20, 2020, and an Intervening Complaint on July 22, 2020. The Defendants filed motions seeking to have the case dismissed. On December 28, 2020, Franklin Circuit Court issued an Order dismissing the Complaint filed by the Plaintiffs, denied Plaintiffs’ Motion to file a Second Amended Complaint, and granted the Office of the Attorney General’s Motion to Intervene. A variety of additional motions and pleadings were filed, including an original action by the Tier 3 Group. This original action is still in the initial stages and is pending with Franklin Circuit Court. (Tia Taylor, et al. v KKR & Co. L.P., et al.) On January 12, 2021, Franklin Circuit Court issued a scheduling Order granting the Attorney General until February 1, 2021 to file an Amended Intervening Complaint, granting the Tier 3 Group until February 11, 2021 to file a Motion to Intervene in this action. Additional extension orders were granted for the Attorney General intervention. The Attorney General filed an Amended Complaint on May 24, 2021. On June 14, 2021, the Tier 3 Group’s Motion to Intervene in the Attorney General action was denied. In the spring of 2022, Franklin Circuit Judge Phillip Shepherd recused and this matter was assigned to Judge Thomas Wingate.

Following the Attorney General’s intervention, the Defendant’s challenged the intervention as beyond the scope of the remand from the Supreme Court in July of 2020. Franklin Circuit Court denied that motion and the matter was on appeal when this case was assigned to Judge Thomas Wingate. Judge Wingate placed the matter in abeyance pending a decision on whether the Attorney General’s intervention was proper. The Court of Appeals held that the Attorney General should not have been allowed to intervene and the Attorney General is currently seeking Discretionary Review by the Supreme Court.

Simultaneously with his intervention, the Attorney General filed a separate, stand-alone case with an identical complaint to protect against the possibility that his intervention would be deemed improper. That matter is now proceeding.

A number of related cases have also developed based on issues raised in the above referenced Mayberry action. There has been an action filed by a number of the Trustees and Officers named in Mayberry seeking reimbursement by Kentucky Retirement Systems of legal fees. Kentucky Retirement Systems has also filed an action against Hallmark Specialty Insurance seeking a declaratory judgement that Hallmark has a duty to defend and indemnify Kentucky Retirement Systems in the Mayberry action. Two of the hedge fund Defendants in the Mayberry action have also filed an action in the United States District Court for the Eastern District of Kentucky naming individual members of the former KRS Board of Trustees as Defendants. This action is seeking a judgment declaring that the Trustees violated Plaintiffs’ right to due process as well as an award of costs and attorneys’ fees. Three actions have also been filed in Delaware regarding the Mayberry action. One filed by Prisma Capital Partners and one filed by Blackstone Alternative Asset Management allege breaches of warranties, representations and more relating to the Subscription Agreements signed by the Kentucky Retirement Systems. The third was filed by Prisma Capital Partners against the Daniel Boone Fund, LLC. Additionally, an action has been filed by PAAMCO against Kentucky Retirement Systems in California also alleging breaches of warranties, representations and more relating to the Subscription Agreements signed by the Kentucky Retirement Systems. Finally, on August 2, 2021, Blackstone Alternative Asset Management, L.P. (BAAM) filed an action against the Kentucky Public Pensions Authority, the Board of Trustees of the Kentucky Retirement Systems, the Board of Trustees of the County Employees Retirement System, the Kentucky Retirement Systems Insurance Fund, and the Kentucky Retirement Systems Pension Fund (collectively “Defendants”) for breach of contract. The Defendants filed a Motion to Dismiss on September 8, 2021. The last of these additional actions, the suit filed by BAAM, was dismissed by Franklin Circuit Court. The Court of Appeals upheld the dismissal, and BAAM is seeking Discretionary Review by the Supreme Court. The rest of these cases remain active in various stages of litigation.

Bayhills

In 2018, Kentucky Retirement Systems sued Bayhills for breach of contract seeking to terminate Bayhills as investment managers. Kentucky Retirement Systems filed the suit in Franklin Circuit Court, but Bayhills removed it to federal district court. Kentucky Retirement Systems successfully had the case remanded back to state court. The case is now pending before Franklin Circuit Court. The Court entered an injunction preventing Bayhills from paying themselves management and other fees during the litigation. Bayhills has appealed this ruling to the Court of Appeals. The Court of Appeals and the Kentucky Supreme Court denied Bayhills their requested relief on appeal. Litigation is still ongoing.

Kentucky State Lodge & Linda Cook

In January and February 2022, two complaints were filed on behalf of specific named plaintiffs and others similarly situated based on the same facts that gave rise to the former River City Fraternal Order of Police (FOP) complaint. KPPA was aware that the River City FOP case impacted more individuals than the named plaintiffs and had been working on legislative and regulatory solutions. Legislation passed by the 2022 General Assembly allows individuals negatively impacted by the Medicare Secondary Payer Act (MSPA) to receive their health insurance through the Kentucky Employees Health Plan, and KPPA has promulgated a regulation to reimburse those individuals who had to pay for health insurance consistent with the Sixth Circuit Opinion. The two lawsuits from January and February are currently in the discovery phase concerning class certification. In addition to the MSPA issue, the two new suits allege that requiring Medicare eligible members to pay for Medicare Part B violates their right to “free” health insurance under their inviolable contract.

Mountain Comprehensive Care Center & Adanta

In 2022, Mountain Comprehensive Care Center and Adanta filed separate suits challenging the actuarially accrued liability assigned these two entities via the process outlined in KRS 61.565, known as House Bill 8 from the 2021 Regular Session of the Kentucky General Assembly. The suits challenge not only the liability assigned to them, but they challenge the constitutionality of the statutory scheme. These suits are currently in the early stages of litigation.

Note P. Reciprocity Agreement

In accordance with Kentucky Revised Statutes 78.5536 and 61.702, CERS and KRS have reciprocity agreements with Teachers’ Retirement System of Kentucky (TRS), and Judicial Form Retirement System (JFRS) for the payment of insurance benefits for those members who have creditable service in CERS, KERS, and/or SPRS, and TRS and/or JFRS systems.

Note Q. Reimbursement of Retired Re-Employed Health Insurance, Active Member Health Insurance Contributions, and Retired Re-Employed Employer Contributions

Reimbursement of Retired Re-Employed Health Insurance

If a retiree is re-employed in a regular full-time position and has chosen health insurance coverage through KPPA, the employer is required to reimburse KPPA for the health insurance premium paid on the retiree's behalf, not to exceed the cost of the single premium rate. Exceptions for retired members who re-employ as a police officer, sheriff or school resource officer exist which may exempt employers from paying employer contributions and health insurance reimbursements if certain requirements are met. For the fiscal year ended June 30, 2023, the reimbursement totaled $13.9 million.

Active Member Health Insurance Contributions

For new plan participants after August 31, 2008, an active member contribution of 1% in addition to the member pension contribution is required. This 1% is applicable to all Nonhazardous and Hazardous funds, and reported in the Insurance Fund. For the fiscal year ended June 30, 2023, members paid into the Insurance Fund $32.4 million.

Retired Re-Employed Employer Contributions

Employers are required to report employer contributions on retired members who are employed in a regular full-time position. These members are referred to as retired re-employed members. These are reported within the employer contributions on the financial statements. Please see the chart below for the breakdown.

Retired Reemployed Healthcare Contributions As of June 30, 2023 ($ in Thousands)	CERS Non-Hazardous	CERS Hazardous	KERS Non-Hazardous	KERS Hazardous	SPRS	KPPA Total
Amount	$4,922	$1,611	$5,885	$1,452	$-	$13,870

Retired Reemployed Employer Contributions As of June 30, 2023 ($ in Thousands)	CERS Non-Hazardous	CERS Hazardous	KERS Non-Hazardous	KERS Hazardous	SPRS	KPPA Total
Amount	$20,057	$8,001	$5,797	$2,940	$-	$36,795

Note R. General Fund Appropriations

During the 2022 Regular Session of the Kentucky General Assembly, HB1 allocated an additional $485 million in general fund dollars to the KERS plans and the SPRS plan. This amount includes $215 million in FY 2021-2022 for the SPRS pension fund to be applied to the unfunded liability, which immediately lowered the SPRS contribution rate from 146.06% to 99.43% for the 2022-2023 fiscal year. The rest of the $485 million will consist of $135 million in each fiscal year of the biennium (2022-23 and 2023-24) for the KERS Nonhazardous pension fund to be applied to the unfunded liability. Also, House Bill 604 allocated $105 million in fiscal year 2023 and fiscal year 2024 to be applied to the unfunded liability of the KERS Nonhazardous pension plan.

General Fund Appropriations ($ in Thousands)			
Fiscal Year	KERS Nonhazardous	SPRS	KPPA Total
2021-2022	$-	$215,000	$215,000
2022-2023	$240,000	$-	$240,000
2023-2024	$240,000	$-	$240,000
Total	**$480,000**	**$215,000**	**$695,000**

Note S. Prisma Daniel Boone Fund

The funds invested with Prisma Daniel Boone Fund continue to be held in a contingency reserve to cover potential obligations arising from the Mayberry Action (see Note O for details of Mayberry Case). The total reported in reserve as of June 30, 2023, is $97.7 million for the Pension Plans and $40.6 million for the Insurance Plan. This is based on the May 31, 2023, report because Absolute Return managers are reported on a one month lag.

Note T. Subsequent Events

Management has evaluated the period June 30, 2023 to December 6, 2023 (the date the combining financial statements were available to be issued) for items requiring recognition or disclosure in the combining financial statements.

Note U. Employer Cessation

Kentucky Revised Statutes 61.522, 61.523 and 78.535 allow for an employer of KERS or CERS to make an election to cease participating in the systems operated by KPPA. The statutes require that the employer ceasing from the plan must pay the employer's portion of the unfunded liability as calculated by the actuary. HB 1 of the 2019 Regular Session established a one-time, voluntary cessation window for KERS Quasi-Governmental Employers, including universities and community colleges, to cease participation for its nonhazardous employees by June 30, 2020. SB 249 of the 2020 Regular session extended the cessation date to June 30, 2021. HB 1 also added additional parameters apart from the normal cessation process including a soft freeze option (Tier 1 and Tier 2 employees continue to earn service credit after the cessation date), created an installment payment option and established different discount rates for use in calculating the cost. Northern Kentucky University (NKU) and Kentucky Housing Corporation (KHC) elected to cease participation effective June 30, 2021, under HB 1. HB 8 of the 2021 Regular Session further adjusted the discount rate to be used to calculate the cessation cost for universities and community colleges. NKU elected a soft-freeze, lump sum payment option, and its actuarially determined estimated portion of the cessation cost was $204.0 million. NKU paid $175.6 million for the pension portion and $28.4 million for the insurance portion of the cessation cost in the 2021 fiscal year. The final cost was calculated in early 2022, and NKU received refunds of $(13.4) million for the pension portion, and $(8.5) million for the insurance portion of the cessation cost. KHC did not make a payment in fiscal year 2021. KHC elected a hard freeze, lump sum payment option, and its actuarially determined estimated portion of the cessation cost was $87.4 million. KHC paid $76.5 million for the pension portion and $10.9 million for the insurance portion of the cessation cost. The deadline has passed for Quasi-Governmental Employers to cease participation under special provisions, therefore, any future cessations will be calculated under normal parameters unless new legislation is enacted.

Note V. Related Party

Perimeter Park West, Incorporated (PPW) was established in 1998 as a 501(c) (25) corporation located at 1260 and 1270 Louisville Road, Frankfort, Kentucky. As such, PPW can only acquire and hold title to real property. The only source of revenue for the Corporation is rent paid from lessees, and interest on account balances. Currently, KPPA is the only lessee. When cash in excess of $500,000 is on hand at PPW, the money is paid back to the PPW shareholders in the form of dividends. PPW's expenses are for the maintenance of the property. Title to the property is held in the name of PPW and there is no mortgage on the property. KPPA does not have title to the property, however, CERS and KRS maintains PPW as an investment on the financial statements and the Pension plans are the sole shareholders. PPW's market value was $7.3 million as of June 30, 2023. PPW is audited annually and submits IRS Form 990 as required for this entity. The purposes of PPW are as an investment for the Pension plans; and to protect the Pension and Insurance Trusts of CERS, KERS, and SPRS should someone become injured on the property. If this occurred and a lawsuit was filed against the property, the suit would be filed against PPW instead of the KPPA, CERS or KRS.

The current lease between PPW and KPPA was entered into on December 5, 2019, and continued thereafter until altered by a new agreement or termination of the lease. The premises, consisting of 85,357 square feet, are rented for the fiscal year period of July 1 to June 30. The contractual lease payments through June 30, 2027, are:

FY 2023 - $961,968

FY 2024 - $961,968

FY 2025 - $961,968

FY 2026 - $961,968

FY 2027 - $961,968

REQUIRED SUPPLEMENTARY INFORMATION
INCLUDING GASB 67 AND 74

Schedule of Employers' NPL - CERS Nonhazardous Pension
As of June 30 ($ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll [(1)]	Net Pension Liability as a Percentage of Covered Payroll
2023	$15,089,106	$8,672,597	$6,416,509	57.48%	$2,966,567	216.29%
2022	15,192,599	7,963,586	7,229,013	52.42%	2,835,173	254.98%
2021	14,941,437	8,565,652	6,375,785	57.33%	2,446,612	260.60%
2020	14,697,244	7,027,327	7,669,917	47.81%	2,462,752	311.44%
2019	14,192,966	7,159,921	7,033,045	50.45%	2,424,796	290.05%
2018	13,109,268	7,018,963	6,090,305	53.54%	2,454,927	248.08%
2017	12,540,545	6,687,237	5,853,308	53.32%	2,376,290	246.32%
2016	11,065,013	6,141,395	4,923,618	55.50%	2,417,187	203.69%
2015	10,740,325	6,440,800	4,299,525	59.97%	2,296,716	187.20%
2014	$9,772,522	$6,528,146	$3,244,376	66.80%	$2,272,270	142.78%

[(1)] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

Schedule of Employers' NPL - CERS Hazardous Pension
As of June 30 ($ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll[(1)]	Net Pension Liability as a Percentage of Covered Payroll
2023	$5,731,148	$3,035,192	$2,695,956	52.96%	$714,837	377.14%
2022	5,769,691	2,718,234	3,051,457	47.11%	666,346	457.94%
2021	5,576,567	2,914,408	2,662,159	52.26%	572,484	465.02%
2020	5,394,732	2,379,704	3,015,028	44.11%	559,551	538.83%
2019	5,176,003	2,413,708	2,762,295	46.63%	553,541	499.02%
2018	4,766,794	2,348,337	2,418,457	49.26%	562,853	429.68%
2017	4,455,275	2,217,996	2,237,279	49.78%	526,559	424.89%
2016	3,726,115	2,010,174	1,715,941	53.95%	526,334	326.02%
2015	3,613,308	2,078,202	1,535,106	57.52%	483,641	317.41%
2014	$3,288,826	$2,087,002	$1,201,824	63.46%	$479,164	250.82%

[(1)] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

Schedule of Employers' NPL - KERS Nonhazardous Pension
As of June 30 ($ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll [1]	Net Pension Liability as a Percentage of Covered Payroll
2023	$15,858,669	$3,539,943	$12,318,726	22.32%	$1,648,318	747.35%
2022	16,281,188	3,013,845	13,267,343	18.51%	1,432,960	925.87%
2021	16,335,657	3,018,660	13,316,997	18.48%	1,441,337	923.93%
2020	16,472,733	2,308,080	14,164,653	14.01%	1,476,156	959.56%
2019	16,356,674	2,233,672	14,123,002	13.66%	1,485,854	950.50%
2018	15,608,221	2,004,446	13,603,775	12.84%	1,509,955	900.94%
2017	15,445,206	2,056,870	13,388,336	13.32%	1,602,396	835.52%
2016	13,379,781	1,980,292	11,399,489	14.80%	1,631,025	698.92%
2015	12,359,673	2,327,783	10,031,890	18.83%	1,544,234	649.64%
2014	$11,550,110	$2,578,291	$8,971,819	22.32%	$1,577,496	568.74%

[1] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

Schedule of Employers' NPL - KERS Hazardous Pension
As of June 30 ($ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll [1]	Net Pension Liability as a Percentage of Covered Payroll
2023	$1,316,521	$893,533	$422,988	67.87%	$223,922	188.90%
2022	1,318,494	810,978	507,516	61.51%	188,648	269.03%
2021	1,311,767	866,140	445,627	66.03%	172,725	258.00%
2020	1,251,027	690,350	560,677	55.18%	171,840	326.28%
2019	1,227,226	680,932	546,294	55.49%	160,600	340.16%
2018	1,150,610	645,485	505,125	56.10%	152,936	330.29%
2017	1,098,630	601,529	497,101	54.75%	178,511	278.47%
2016	919,517	527,879	391,638	57.41%	158,828	246.58%
2015	895,433	552,468	342,965	61.70%	128,680	266.53%
2014	$816,850	$561,484	$255,366	68.74%	$129,076	197.84%

[1] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

Schedule of Employer's NPL - SPRS Pension
As of June 30 ($ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll [1]	Net Pension Liability as a Percentage of Covered Payroll
2023	$1,039,813	$591,514	$448,299	56.89%	$65,693	682.42%
2022	1,057,752	551,699	506,053	52.16%	48,061	1,052.94%
2021	1,055,824	356,346	699,478	33.75%	47,873	1,461.11%
2020	1,049,237	293,949	755,288	28.02%	49,019	1,540.81%
2019	1,035,000	286,165	748,835	27.65%	49,515	1,512.34%
2018	969,622	267,572	702,050	27.60%	50,346	1,394.45%
2017	943,271	255,737	687,534	27.11%	54,065	1,271.68%
2016	795,421	218,012	577,409	27.41%	46,685	1,236.82%
2015	734,156	247,228	486,928	33.68%	45,765	1,063.97%
2014	$681,118	$260,974	$420,144	38.32%	$44,616	941.69%

[1] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

Schedule of Changes in Employers' TPL - CERS Nonhazardous
As of June 30 ($ in Thousands)

Total Pension Liability (TPL)	**2023**	**2022**	**2021**	**2020**	**2019**	**2018**	**2017**	**2016**	**2015**	**2014**
Service Cost	$283,633	$272,250	$280,165	$280,092	$254,643	$254,169	$193,082	$209,101	$207,400	$192,482
Interest	$920,862	906,401	892,309	861,720	794,935	760,622	803,555	780,587	733,002	710,526
Benefit Changes	$3,862	-	4,106	-	-	15,708	-	-	-	-
Difference between Expected and Actual Experience	$511,721	(49,439)	(91,776)	173,345	87,377	279,401	(208,015)	-	49,966	-
Changes of Assumptions	$(905,957)	-	-	-	727,351	-	1,388,800	-	606,293	-
Benefit Payments	$(917,614)	(878,050)	(840,611)	(810,879)	(780,608)	(741,177)	(701,891)	(665,000)	(628,858)	(597,136)
Net Change in TPL	**(103,493)**	**251,162**	**244,193**	**504,278**	**1,083,698**	**568,723**	**1,475,532**	**324,687**	**967,803**	**305,872**
TPL – Beginning	**15,192,599**	**14,941,437**	**14,697,244**	**14,192,966**	**13,109,268**	**12,540,545**	**11,065,013**	**10,740,325**	**9,772,522**	**9,466,650**
TPL – Ending (a)	**$15,089,106**	**$15,192,599**	**$14,941,437**	**$14,697,244**	**$14,192,966**	**$13,109,268**	**$12,540,545**	**$11,065,013**	**$10,740,325**	**$9,772,522**
Plan Fiduciary Net Position [1]										
Contributions – Employer	$697,681	$606,807	$472,228	$475,416	$393,453	$358,017	$333,554	$284,105	$298,565	$324,231
Contributions – Member [2]	147,769	186,648	165,698	168,994	159,064	160,370	150,715	141,674	140,311	128,568
Refunds of Contributions	(23,263)	(19,789)	(13,862)	(14,918)	(14,387)	(14,608)	(14,430)	(13,753)	(13,523)	(14,286)
Retirement Benefit	(894,351)	(858,261)	(826,749)	(795,960)	(766,221)	(726,569)	(687,461)	(651,246)	(615,335)	(582,850)
Net Investment Income [2]	805,303	(494,801)	1,762,739	56,178	390,664	573,829	825,900	(40,800)	110,568	895,530
Administrative Expense	(24,128)	(22,670)	(21,729)	(22,304)	(21,659)	(19,592)	(19,609)	(19,385)	(18,212)	(18,615)
Other	-	-	-	-	44 [5]	361 [5]	(42,827) [4]	-	10,280	-
Net Change in Plan Fiduciary Net Position	**709,011**	**(602,066)**	**1,538,325**	**(132,594)**	**140,958**	**331,808**	**545,843**	**(299,405)**	**(87,346)**	**732,578**
Plan Fiduciary Net Position - Beginning	**7,963,586**	**8,565,652**	**7,027,327**	**7,159,921**	**7,018,963**	**6,687,237**	**6,141,395**	**6,440,800**	**6,528,146**	**5,795,568**
Prior Year Adjustment	**-**	**-**	**-**	**-**	**-**	**(82)**	**-**	**-**	**-**	**-**
Plan Fiduciary Net Position – Ending (b)	**8,672,597**	**7,963,586**	**8,565,652**	**7,027,327**	**7,159,921**	**7,018,963**	**6,687,237**	**6,141,395**	**6,440,800**	**6,528,146**
Net Pension Liability – Ending (a) – (b)	**$6,416,509**	**$7,229,013**	**$6,375,785**	**$7,669,917**	**$7,033,045**	**$6,090,305**	**$5,853,308**	**$4,923,618**	**$4,299,525**	**$3,244,376**
Plan Fiduciary Net Position as a Percentage	57.48%	52.42%	57.33%	47.81%	50.45%	53.54%	53.32%	55.50%	59.97%	66.80%
Covered Payroll [3]	$2,966,567	$2,835,173	$2,446,612	$2,462,752	$2,424,796	$2,454,927	$2,376,290	$2,417,187	$2,296,716	$2,272,270
Net Pension Liability as a Percentage of Covered Payroll	**216.29%**	**254.98%**	**260.60%**	**311.44%**	**290.05%**	**248.08%**	**246.32%**	**203.69%**	**187.20%**	**142.78%**

[1] Does not include 401(h) assets for fiscal years 2017 and later. Assets totaled $108,843,000 as of June 30, 2023.

[2] Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later. For fiscal year 2023, 401(h) contributions equaled $(30,000); and associated investment return equaled $10,113,000.

[3] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

[4] Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later.

[5] Northern Trust Settlement.

Schedule of Changes in Employers' TPL - CERS Hazardous
As of June 30 ($ in Thousands)

Total Pension Liability (TPL)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Service Cost	$115,389	$109,683	$109,350	$109,887	$77,426	$81,103	$58,343	$66,249	$71,934	$66,761
Interest	350,413	338,799	327,963	314,762	289,741	270,694	270,860	262,886	247,008	238,665
Benefit Changes	-	-	333	-	-	2,172	-	-	-	-
Difference between Expected and Actual Experience	97,750	56,197	38,850	73,696	27,364	205,882	92,588	-	41,935	-
Changes of Assumptions	(275,934)	-	-	-	276,541	-	536,667	-	166,849	-
Benefit Payments	(326,161)	(311,555)	(294,661)	(279,616)	(261,863)	(248,332)	(229,299)	(216,327)	(203,244)	(192,299)
Net Change in TPL	**(38,543)**	**193,124**	**181,835**	**218,729**	**409,209**	**311,519**	**729,159**	**112,807**	**324,482**	**113,127**
TPL – Beginning	**5,769,691**	**5,576,567**	**5,394,732**	**5,176,003**	**4,766,794**	**4,455,275**	**3,726,115**	**3,613,308**	**3,288,826**	**3,175,699**
TPL – Ending (a)	**$5,731,148**	**$5,769,691**	**$5,576,567**	**$5,394,732**	**$5,176,003**	**$4,766,794**	**$4,455,275**	**$3,726,115**	**$3,613,308**	**$3,288,826**
Plan Fiduciary Net Position [1]										
Contributions – Employer	$308,223	$222,028	$172,205	$168,443	$138,053	$127,660	$115,947	$105,713	$108,071	$115,240
Contributions – Member [2]	56,987	69,565	62,367	63,236	58,661	61,089	60,101	52,972	47,692	43,722
Refunds of Contributions	(6,568)	(5,766)	(4,662)	(3,814)	(2,854)	(4,214)	(2,315)	(2,879)	(3,111)	(2,664)
Retirement Benefit	(319,593)	(305,789)	(289,999)	(275,802)	(259,009)	(244,118)	(226,984)	(213,448)	(200,134)	(189,635)
Net Investment Income [2]	280,033	(174,217)	596,641	15,914	132,232	191,324	270,473	(9,020)	37,104	288,490
Administrative Expense	(2,124)	(1,995)	(1,848)	(1,981)	(1,726)	(1,504)	(1,421)	(1,366)	(1,288)	(1,721)
Other	-	-	-	-	14 [5]	111 [5]	(7,979) [4]	-	2,865	-
Net Change in Plan Fiduciary Net Position	**316,958**	**(196,174)**	**534,704**	**(34,004)**	**65,371**	**130,348**	**207,822**	**(68,028)**	**(8,801)**	**253,432**
Plan Fiduciary Net Position – Beginning	**2,718,234**	**2,914,408**	**2,379,704**	**2,413,708**	**2,348,337**	**2,217,996**	**2,010,174**	**2,078,202**	**2,087,002**	**1,833,570**
Prior Year Adjustment	**-**	**-**	**-**	**-**	**-**	**(7)**	**-**	**-**	**-**	**-**
Plan Fiduciary Net Position – Ending (b)	**3,035,192**	**2,718,234**	**2,914,408**	**2,379,704**	**2,413,708**	**2,348,337**	**2,217,996**	**2,010,174**	**2,078,202**	**2,087,002**
Net Pension Liability – Ending (a) – (b)	**$2,695,956**	**$3,051,457**	**$2,662,159**	**$3,015,028**	**$2,762,295**	**$2,418,457**	**$2,237,279**	**$1,715,941**	**$1,535,106**	**$1,201,824**
Plan Fiduciary Net Position as a Percentage	52.96%	47.11%	52.26%	44.11%	46.63%	49.26%	49.78%	53.95%	57.52%	63.46%
Covered Payroll [3]	$714,837	$666,346	$572,484	$559,551	$553,541	$562,853	$526,559	$526,334	$483,641	$479,164
Net Pension Liability as a Percentage of Covered Payroll	**377.14%**	**457.94%**	**465.02%**	**538.83%**	**499.02%**	**429.68%**	**424.89%**	**326.02%**	**317.41%**	**250.82%**

[1] *Does not include 401(h) assets for fiscal years 2017 and later. Assets totaled $20,605,000 as of June 30, 2023.*

[2] *Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later. For fiscal year 2023, 401(h) contributions equaled $(20,000): and associated investment return equaled $1,931,000.*

[3] *Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.*

[4] *Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later.*

[5] *Northern Trust Settlement.*

Schedule of Changes in Employers' TPL - KERS Nonhazardous
As of June 30 ($ in Thousands)

Total Pension Liability (TPL)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Service Cost	$163,563	$165,616	$171,472	$179,702	$184,988	$195,681	$143,858	$139,631	$143,847	$133,361
Interest	827,579	830,440	838,084	832,178	793,163	785,123	870,725	891,897	859,509	853,653
Benefit Changes	2,024	-	2,091	-	-	9,624	-	-	-	-
Difference between Expected and Actual Experience	310,954	(15,034)	(130,268)	115,515	70,529	153,565	(134,379)	-	30,958	-
Changes of Assumptions	(691,088)	-	-	-	700,464	-	2,145,530	923,999	694,592	-
Benefit Payments	(1,035,551)	(1,035,491)	(1,018,455)	(1,011,336)	(1,000,691)	(980,978)	(960,309)	(935,419)	(919,343)	(903,564)
Net Change in TPL	**(422,519)**	**(54,469)**	**(137,076)**	**116,059**	**748,453**	**163,015**	**2,065,425**	**1,020,108**	**809,563**	**83,450**
TPL – Beginning	**16,281,188**	**16,335,657**	**16,472,733**	**16,356,674**	**15,608,221**	**15,445,206**	**13,379,781**	**12,359,673**	**11,550,110**	**11,466,660**
TPL – Ending (a)	**$15,858,669**	**$16,281,188**	**$16,335,657**	**$16,472,733**	**$16,356,674**	**$15,608,221**	**$15,445,206**	**$13,379,781**	**$12,359,673**	**$11,550,110**
Plan Fiduciary Net Position [1]										
Contributions – Employer Other [6]	$1,275,007	$1,116,869	$1,134,232	$948,592	$1,035,462	$689,143	$757,121	$513,084	$521,691	$296,836
Contributions – Member [2]	84,579	89,607	90,202	96,594	93,759	104,972	100,543	106,494	104,606	97,487
Refunds of Contributions	(11,847)	(12,116)	(8,953)	(11,523)	(12,342)	(13,603)	(11,819)	(12,130)	(13,552)	(13,627)
Retirement Benefit	(1,023,704)	(1,023,375)	(1,009,502)	(999,813)	(988,349)	(967,375)	(948,490)	(923,288)	(905,791)	(889,937)
Net Investment Income [2]	215,880	(162,461)	516,223	52,499	112,371	144,881	220,985	(20,663)	44,570	337,923
Administrative Expense	(13,817)	(13,339)	(11,622)	(11,941)	(11,712)	(10,692)	(10,957)	(10,989)	(10,474)	(11,145)
Other	-	-	-	0	37 [5]	301 [5]	(30,805) [4]	-	8,442	-
Net Change in Fiduciary Net Position	**526,098**	**(4,815)**	**710,580**	**74,408**	**229,226**	**(52,373)**	**76,578**	**(347,491)**	**(250,508)**	**(182,463)**
Plan Fiduciary Net Position – Beginning	**3,013,845**	**3,018,660**	**2,308,080**	**2,233,672**	**2,004,446**	**2,056,870**	**1,980,292**	**2,327,783**	**2,578,291**	**2,760,754**
Prior Year Adjustment	**-**	**-**	**-**	**-**	**-**	**(51)**	**-**	**-**	**-**	**-**
Plan Fiduciary Net Position – Ending (b)	**3,539,943**	**3,013,845**	**3,018,660**	**2,308,080**	**2,233,672**	**2,004,446**	**2,056,870**	**1,980,292**	**2,327,783**	**2,578,291**
Net Pension Liability – Ending (a) – (b)	**$12,318,726**	**$13,267,343**	**$13,316,997**	**$14,164,653**	**$14,123,002**	**$13,603,775**	**$13,388,336**	**$11,399,489**	**$10,031,890**	**$8,971,819**
Plan Fiduciary Net Position as a Percentage	22.32%	18.51%	18.48%	14.01%	13.66%	12.84%	13.32%	14.80%	18.83%	22.32%
Covered Payroll [3]	$1,648,318	$1,432,960	$1,441,337	$1,476,156	$1,485,854	$1,509,955	$1,602,396	$1,631,025	$1,544,234	$1,577,496
Net Pension Liability as a Percentage of Covered Payroll	**747.35%**	**925.87%**	**923.93%**	**959.56%**	**950.50%**	**900.94%**	**835.52%**	**698.92%**	**649.64%**	**568.74%**

[1] Does not include 401(h) assets for fiscal years 2017 and later. Assets totaled $67,263,000 as of June 30, 2023.

[2] Does not include 401(h) contributions or associated investment income for fiscal year 2017 and later. For fiscal year 2023 401(h) contributions equaled $(12,000); and associated investment return equaled $4,378,000.

[3] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

[4] Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later.

[5] Northern Trust Settlement.

[6] Includes $63.1 million and $175.6 million employer cessation contributions for fiscal year 2022 and 2021, respectively

Schedule of Changes in Employers' TPL - KERS Hazardous
As of June 30 ($ in Thousands)

Total Pension Liability (TPL)	2023	2022	2021	2020	2019	2018	2017	2016	2015
Service Cost	$26,852	$26,885	$28,450	$25,568	$27,117	$28,641	$21,081	$20,751	$18,729
Interest	79,822	79,422	75,743	74,357	69,657	66,536	66,589	64,851	61,005
Benefit Changes	-	-	26	-	-	705	-	-	-
Difference between Expected and Actual Experience	(1,773)	(17,557)	34,789	(1,095)	1,395	24,215	26,902	-	6,067
Changes of Assumptions	(24,197)	-	-	-	50,658	-	127,878	-	52,165
Benefit Payments	(82,677)	(82,023)	(78,268)	(75,029)	(72,211)	(68,117)	(63,338)	(61,518)	(59,383)
Net Change in TPL	**(1,973)**	**6,727**	**60,740**	**23,801**	**76,616**	**51,980**	**179,112**	**24,084**	**78,583**
TPL – Beginning	**1,318,494**	**1,311,767**	**1,251,027**	**1,227,226**	**1,150,610**	**1,098,630**	**919,517**	**895,433**	**816,850**
TPL – Ending (a)	**$1,316,521**	**$1,318,494**	**$1,311,767**	**$1,251,027**	**$1,227,226**	**$1,150,610**	**$1,098,630**	**$919,517**	**$895,433**
Plan Fiduciary Net Position [(1)]									
Contributions – Employer	$72,807	$59,055	$62,200	$59,115	$55,259	$43,661	$52,974	$23,759	$28,536
Contributions - Member [(2)]	17,459	20,588	19,961	19,769	17,118	17,891	17,524	15,739	13,207
Refunds of Contributions	(4,041)	(4,976)	(4,380)	(3,168)	(2,684)	(2,501)	(2,106)	(2,211)	(2,610)
Retirement Benefit	(78,636)	(77,047)	(73,888)	(71,861)	(69,527)	(65,616)	(61,231)	(59,306)	(56,773)
Net Investment Income [(2)]	76,479	(51,317)	173,152	6,739	36,380	51,467	70,994	(1,653)	8,701
Administrative Expense	(1,513)	(1,465)	(1,255)	(1,176)	(1,103)	(975)	(919)	(916)	(844)
Other	-	-	-	-	4 [(5)]	33 [(5)]	(3,586) [(4)]	-	767
Net Change in Plan Fiduciary Net Position	**82,555**	**(55,162)**	**175,790**	**9,418**	**35,447**	**43,960**	**73,650**	**(24,588)**	**(9,016)**
Plan Fiduciary Net Position – Beginning	**810,978**	**866,140**	**690,350**	**680,932**	**645,485**	**601,529**	**527,879**	**552,468**	**561,484**
Prior Year Adjustment	**-**	**-**	**-**	**-**	**-**	**(4)**	**-**	**-**	**-**
Fiduciary Net Position – Ending (b)	**893,533**	**810,978**	**866,140**	**690,350**	**680,932**	**645,485**	**601,529**	**527,879**	**552,468**
Net Pension Liability – Ending (a) – (b)	**$422,988**	**$507,516**	**$445,627**	**$560,677**	**$546,294**	**$505,125**	**$497,101**	**$391,638**	**$342,965**
Plan Fiduciary Net Position as a Percentage	67.87%	61.51%	66.03%	55.18%	55.49%	56.10%	54.75%	57.41%	61.70%
Covered Payroll [(3)]	$223,922	$188,648	$172,725	$171,840	$160,600	$152,936	$178,511	$158,828	$128,680
Net Pension Liability as a Percentage of Covered Payroll	**188.90%**	**269.03%**	**258.00%**	**326.28%**	**340.16%**	**330.29%**	**278.47%**	**246.58%**	**266.53%**

[(1)] Does not include 401(h) assets for fiscal years 2017 and later. Assets totaled $9,034,000 as of June 30, 2023.

[(2)] Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later. For fiscal years 2023, 401(h) contributions equaled $(7,000); and associated investment return equaled $781,000.

[(3)] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

[(4)] Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later.

[(5)] Northern Trust Settlement.

Schedule of Changes in Employer's TPL - SPRS
As of June 30 ($ in Thousands)

Total Pension Liability (TPL)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Service Cost	$13,229	$12,158	$12,530	$13,192	$11,726	$11,890	$8,297	$8,402	$7,695	$7,142
Interest	53,853	53,740	53,417	52,697	49,301	47,978	51,769	52,951	50,661	50,391
Benefit Changes	-	3,130	35	-	-	184	-	-	-	-
Difference between Expected and Actual Experience	10,204	(2,700)	4,127	10,859	20,952	25,126	8,143	-	9,331	-
Changes of Assumptions	(31,255)	-	-	0	44,510	-	136,602	56,191	40,201	-
Benefit Payments	(63,970)	(64,400)	(63,522)	(62,511)	(61,111)	(58,827)	(56,960)	(56,279)	(54,850)	(53,239)
Net Change in TPL	**(17,939)**	**1,928**	**6,587**	**14,237**	**65,378**	**26,351**	**147,850**	**61,265**	**53,038**	**4,294**
TPL - Beginning	**1,057,752**	**1,055,824**	**1,049,237**	**1,035,000**	**969,622**	**943,271**	**795,421**	**734,156**	**681,118**	**676,824**
TPL – Ending (a)	**$1,039,813**	**$1,057,752**	**$1,055,824**	**$1,049,237**	**$1,035,000**	**$969,622**	**$943,271**	**$795,421**	**$734,156**	**$681,118**
Plan Fiduciary Net Position [1]										
Contributions – Employer	$58,120	$277,341	$59,650	$59,453	$60,048	$46,877	$63,239	$25,822	$31,990	$20,279
Contributions - Member [2]	5,250	4,773	4,752	4,767	5,062	5,522	5,348	5,263	5,244	5,075
Refunds of Contributions	(166)	(280)	(273)	(88)	(162)	(22)	(26)	(11)	(85)	(213)
Retirement Benefit	(63,804)	(64,120)	(63,249)	(62,423)	(60,949)	(58,805)	(56,934)	(56,268)	(54,765)	(53,026)
Net Investment Income [2]	40,708	(22,088)	61,729	6,341	14,816	18,437	26,795	(3,843)	3,426	40,374
Administrative Expense	(293)	(273)	(212)	(266)	(225)	(194)	(181)	(178)	(201)	(215)
Other	-	-	-	-	3 [5]	21 [5]	(517) [4]	-	645	-
Net Change in Plan Fiduciary Net Position	**39,815**	**195,353**	**62,397**	**7,784**	**18,593**	**11,836**	**37,724**	**(29,215)**	**(13,746)**	**12,274**
Plan Fiduciary Net Position – Beginning	**551,699**	**356,346**	**293,949**	**286,165**	**267,572**	**255,737**	**218,012**	**247,228**	**260,974**	**248,700**
Prior Year Adjustment	**-**	**-**	**-**	**-**	**-**	**(1)**	**-**	**-**	**-**	**-**
Plan Fiduciary Net Position – Ending (b)	**591,514**	**551,699**	**356,346**	**293,949**	**286,165**	**267,572**	**255,737**	**218,012**	**247,228**	**260,974**
Net Pension Liability – Ending (a) – (b)	**$448,299**	**$506,053**	**$699,478**	**$755,288**	**$748,835**	**$702,050**	**$687,534**	**$577,409**	**$486,928**	**$420,144**
Plan Fiduciary Net Position as a Percentage	56.89%	52.16%	33.75%	28.02%	27.65%	27.60%	27.11%	27.41%	33.68%	38.32%
Covered Payroll [3]	$65,693	$48,061	$47,873	$49,019	$49,515	$50,346	$54,065	$46,685	$45,765	$44,616
Net Pension Liability as a Percentage of Covered Payroll	**682.42%**	**1,052.94%**	**1,461.11%**	**1,540.81%**	**1,512.34%**	**1,394.45%**	**1,271.68%**	**1,236.82%**	**1,063.97%**	**941.69%**

[1] Does not include 401(h) assets for fiscal years 2017 and later. Assets totaled $1,312,000 as of June 30, 2023.

[2] Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later. For fiscal year 2023, 401(h) contributions equaled ($8,000); and associated investment return equaled $93,000.

[3] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

[4] Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later.

[5] Northern Trust Settlement.

The actuarially determined contributions effective for fiscal year ending 2023 that are documented in the schedules on the following pages, were calculated as of June 30, 2021. Based on the June 30, 2021, actuarial valuation report, the actuarial methods and assumptions used to calculate these contribution rates are below:

Notes to Schedule of Employers' Contribution Item	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
Determined by the Actuarial Valuation as of:	June 30, 2021	June 30, 2021	June 30, 2021	June 30, 2021	June 30, 2021
Actuarial Cost Method:	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal
Asset Valuation Method:	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay
Amortization Period:	30-year closed period at June 30, 2019, Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases	30-year closed period at June 30, 2019, Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases	30-year closed period at June 30, 2019, Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases	30-year closed period at June 30, 2019, Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases	30-year closed period at June 30, 2019, Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases
Payroll Growth	2.00%	2.00%	0.00%	0.00%	0.00%
Investment Return:	6.25%	6.25%	5.25%	6.25%	5.25%
Inflation:	2.30%	2.30%	2.30%	2.30%	2.30%
Salary Increase:	3.30% to 10.30%, varies by service	3.55% to 19.05%, varies by service	3.30% to 15.30%, varies by service	3.55% to 20.05%, varies by service	3.55% to 16.05%, varies by service
Mortality:	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019
Phase-In provision	Board certified rate is phased into the actuarially determined rate in accordance with HB 362 enacted in 2018.	Board certified rate is phased into the actuarially determined rate in accordance with HB 362 enacted in 2018.	N/A	N/A	N/A

Schedule of Employers' Contributions Pension - CERS Nonhazardous
As of June 30 ($ in Thousands)

Fiscal Year Ending	Actuarially Determined Contribution (1)	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll (2)	Actual Contributions as a Percentage of Covered Payroll
2023	$697,634	$697,681	$(47)	$2,966,567	23.52%
2022	636,071	606,807	29,264	2,835,173	21.40%
2021	582,538	472,228	110,310	2,446,612	19.30%
2020	554,612	475,416	79,196	2,462,752	19.30%
2019	529,575	393,453	136,122	2,424,796	16.23%
2018	355,473	358,017	(2,544)	2,454,927	14.58%
2017	331,492	333,554	(2,062)	2,376,290	14.04%
2016	282,767	284,106	(1,339)	2,417,187	11.75%
2015	297,715	298,566	(851)	2,296,716	13.00%
2014	$324,231	$324,231	$-	$2,272,270	14.27%

(1) Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

(2) Based on derived compensation using the provided employer contribution information for fiscal years 2017, and later.

Schedule of Employers' Contributions Pension - CERS Hazardous
As of June 30 ($ in Thousands)

Fiscal Year Ending	Actuarially Determined Contribution (1)	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll (2)	Actual Contributions as a Percentage of Covered Payroll
2023	$308,037	$308,223	$(186)	$714,837	43.12%
2022	269,542	222,028	47,514	666,346	33.32%
2021	240,558	172,205	68,353	572,484	30.08%
2020	206,922	168,443	38,479	559,551	30.10%
2019	197,559	138,053	59,506	553,541	24.94%
2018	124,953	127,660	(2,707)	562,853	22.68%
2017	114,316	115,947	(1,631)	526,559	22.02%
2016	104,952	105,713	(761)	526,334	20.08%
2015	107,514	108,071	(557)	483,641	22.35%
2014	$115,240	$115,240	$-	$479,164	24.05%

(1) Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

(2) Based on derived compensation using the provided employer contribution information for fiscal years 2017, and later.

Schedule of Employers' Contributions Pension - KERS Nonhazardous
As of June 30 ($ in Thousands)

Fiscal Year Ending	Actuarially Determined Contribution [1]	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll [2]	Actual Contributions as a Percentage of Covered Payroll
2023	$1,034,918	$1,275,007	$(240,089)	$1,648,318	77.35%
2022	1,048,861	1,116,869	(68,008)	1,432,960	77.94%
2021	1,056,211	1,134,232	(78,021)	1,441,337	78.69%
2020	1,048,513	948,592	99,921	1,476,156	64.26%
2019	1,055,402	1,035,462	19,940	1,485,854	69.69%
2018	633,879	689,143	(55,264)	1,509,955	45.64%
2017	623,813	757,121	(133,308)	1,602,396	47.25%
2016	512,670	513,084	(414)	1,631,025	31.46%
2015	520,948	521,691	(743)	1,544,234	33.78%
2014	$520,765	$296,836	$223,929	$1,577,496	18.82%

[1] Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

[2] Based on derived compensation using the provided employer contribution information for fiscal year ended 2017, and later.

Schedule of Employers' Contributions Pension - KERS Hazardous
As of June 30 ($ in Thousands)

Fiscal Year Ending	Actuarially Determined Contribution [1]	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll [2]	Actual Contributions as a Percentage of Covered Payroll
2023	$72,778	$72,807	$(29)	$223,922	32.51%
2022	59,052	59,055	(3)	188,648	31.30%
2021	62,181	62,200	(19)	172,725	36.01%
2020	59,096	59,115	(19)	171,840	34.40%
2019	55,230	55,259	(29)	160,600	34.41%
2018	31,321	43,661	(12,340)	152,936	28.55%
2017	37,630	52,974	(15,344)	178,511	29.68%
2016	23,690	23,759	(69)	158,828	14.96%
2015	28,374	28,536	(162)	128,680	22.18%
2014	$13,570	$11,670	$1,900	$129,076	9.04%

[1] Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

[2] Based on derived compensation using the provided employer contribution information for fiscal year ended 2017, and later.

Schedule of Employer's Contributions Pension - SPRS
As of June 30 ($ in Thousands)

Fiscal Year Ending	Actuarially Determined Contribution [1]	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll [2]	Actual Contributions as a Percentage of Covered Payroll
2023	$58,120	$58,120	$-	$65,693	88.47%
2022	62,341	277,341	(215,000)	48,061	577.06%
2021	59,263	59,650	(387)	47,873	124.60%
2020	58,358	59,453	(1,095)	49,019	121.29%
2019	58,948	60,048	(1,100)	49,515	121.27%
2018	36,033	46,877	(10,844)	50,346	93.11%
2017	35,937	63,240	(27,303)	54,065	116.97%
2016	25,723	25,822	(99)	46,685	55.31%
2015	31,444	31,990	(546)	45,765	69.90%
2014	$25,808	$20,279	$5,529	$44,616	45.45%

[1] Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

[2] Based on derived compensation using the provided employer contribution information for fiscal years ended 2017, and later.

Schedule of the Employers' Net OPEB Liability - CERS Nonhazardous
As of June 30 ($ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll [1]	Net OPEB Liability as a Percentage of Covered Payroll
2023	$3,260,308	$3,398,375	$(138,067)	104.23%	$2,982,960	(4.63)%
2022	5,053,498	3,079,984	1,973,514	60.95%	2,843,218	69.41%
2021	5,161,251	3,246,801	1,914,450	62.91%	2,619,695	73.08%
2020	4,996,309	2,581,613	2,414,696	51.67%	2,620,585	92.14%
2019	4,251,466	2,569,511	1,681,955	60.44%	2,577,378	65.26%
2018	4,189,606	2,414,126	1,775,480	57.62%	2,570,156	69.08%
2017	$4,222,878	$2,212,536	$2,010,342	52.39%	$2,480,130	81.06%

[1] Based on derived compensation using the provided employer contribution information. This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of the Employers' Net OPEB Liability - CERS Hazardous
As of June 30 ($ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll [1]	Net OPEB Liability as a Percentage of Covered Payroll
2023	$1,771,015	$1,634,192	$136,823	92.27%	$719,666	19.01%
2022	2,374,457	1,522,671	851,786	64.13%	668,667	127.39%
2021	2,436,383	1,627,824	808,559	66.81%	613,985	131.69%
2020	2,245,222	1,321,117	924,105	58.84%	596,001	155.05%
2019	2,080,574	1,340,714	739,860	64.44%	583,632	126.77%
2018	1,993,941	1,280,982	712,959	64.24%	588,526	121.14%
2017	$2,015,673	$1,189,001	$826,672	58.99%	$542,710	152.32%

[1] Based on derived compensation using the provided employer contribution information. This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of the Employers' Net OPEB Liability - KERS Nonhazardous
As of June 30 ($ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll [1]	Net OPEB Liability as a Percentage of Covered Payroll
2023	$2,317,344	$1,532,752	$784,592	66.14%	$1,653,492	47.45%
2022	3,576,530	1,364,419	2,212,111	38.15%	1,437,132	153.93%
2021	3,698,804	1,419,477	2,279,327	38.38%	1,452,345	156.94%
2020	3,599,557	1,060,649	2,538,908	29.47%	1,482,431	171.27%
2019	3,217,985	995,089	2,222,896	30.92%	1,515,953	146.63%
2018	3,262,117	891,205	2,370,912	27.32%	1,573,898	150.64%
2017	$3,353,332	$817,370	$2,535,962	24.37%	$1,593,097	159.18%

[1] Based on derived compensation using the provided employer contribution information. This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of the Employers' Net OPEB Liability - KERS Hazardous
As of June 30 ($ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll [1]	Net OPEB Liability as a Percentage of Covered Payroll
2023	$417,361	$625,356	$(207,995)	149.84%	$223,922	(92.89)%
2022	595,789	588,162	7,627	98.72%	188,648	4.04%
2021	622,152	633,677	(11,525)	101.85%	172,725	(6.67)%
2020	564,524	521,755	42,769	92.42%	182,209	23.47%
2019	507,204	534,053	(26,849)	105.29%	151,448	(17.73)%
2018	485,904	519,072	(33,168)	106.83%	190,317	(17.43)%
2017	$494,869	$488,838	$6,031	98.78%	$171,087	3.53%

[1] Based on derived compensation using the provided employer contribution information. For 2021, 2022, and 2023 derived compensation based on pension contribution information, as there were no required employer contributions for the insurance fund for FYE 2021, FYE 2022, and FYE 2023. This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of the Employer's Net OPEB Liability - SPRS
As of June 30 ($ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll [1]	Net OPEB Liability as a Percentage of Covered Payroll
2023	$263,450	$248,109	$15,341	94.18%	$65,830	23.30%
2022	351,453	231,242	120,211	65.80%	48,600	247.35%
2021	364,899	247,318	117,581	67.78%	47,155	249.35%
2020	339,942	201,340	138,602	59.23%	48,231	287.37%
2019	312,553	201,206	111,347	64.38%	48,780	228.26%
2018	301,012	190,847	110,165	63.40%	50,064	220.05%
2017	$313,234	$178,838	$134,396	57.09%	$48,873	274.99%

[1] Based on derived compensation using the provided employer contribution information. This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of Changes in Employers' Net OPEB Liability - CERS Nonhazardous
As of June 30 ($ in Thousands)

	2023	2022	2021	2020	2019	2018	2017
Total OPEB Liability							
Service Cost	$98,045	$138,225	$132,407	$131,289	$119,011	$122,244	$85,468
Interest on Total OPEB liability	283,330	263,390	262,128	236,126	240,352	242,048	240,854
Benefit Changes	5,153	74,108	3,359	-	-	4,306	-
Difference between Expected and Actual Experience	(2,134,260)	(68,111)	(340,831)	505,843	(404,301)	(240,568)	(6,641)
Assumption Changes	120,132	(323,247)	282,975	60,225	268,842	(4,876)	520,286
Benefit Payments (1) (2)	(165,590)	(192,118)	(175,096)	(188,640)	(162,044)	(156,426)	(140,120)
Net Change in Total OPEB Liability	**(1,793,190)**	**(107,753)**	**164,942**	**744,843**	**61,860**	**(33,272)**	**699,847**
Total OPEB Liability - Beginning	**5,053,498**	**5,161,251**	**4,996,309**	**4,251,466**	**4,189,606**	**4,222,878**	**3,523,031**
Total OPEB Liability - Ending (a)	**$3,260,308**	**$5,053,498**	**$5,161,251**	**$4,996,309**	**$4,251,466**	**$4,189,606**	**$4,222,878**
Plan Fiduciary Net Position							
Contributions – Employer (2)	$151,052	$187,204	$186,509	$179,521	$168,905	$145,809	$133,326
Contributions – Member	17,751	15,925	13,613	12,964	11,801	10,825	9,158
Benefit Payments (1) (2)	(165,590)	(192,118)	(175,096)	(188,640)	(162,044)	(156,426)	(140,120)
OPEB Plan Net Investment Income	316,115	(176,895)	641,084	9,160	137,591	202,068	264,782
OPEB Plan Administrative Expense	(937)	(933)	(922)	(903)	(877)	(761)	(789)
Other (4)	-	-	-	-	9	75	-
Net Change in Plan Fiduciary Net Position	**318,391**	**(166,817)**	**665,188**	**12,102**	**155,385**	**201,590**	**266,357**
Plan Fiduciary Net Position – Beginning	**3,079,984**	**3,246,801**	**2,581,613**	**2,569,511**	**2,414,126**	**2,212,536**	**1,946,179**
Plan Fiduciary Net Position – Ending (b)	**3,398,375**	**3,079,984**	**3,246,801**	**2,581,613**	**2,569,511**	**2,414,126**	**2,212,536**
Net OPEB Liability – Ending (a) – (b)	**$(138,067)**	**$1,973,514**	**$1,914,450**	**$2,414,696**	**$1,681,955**	**$1,775,480**	**$2,010,342**
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	104.23%	60.95%	62.91%	51.67%	60.44%	57.62%	52.39%
Covered Payroll (3)	$2,982,960	$2,843,218	$2,619,695	$2,620,585	$2,577,378	$2,570,156	$2,480,130
Net OPEB Liability as a Percentage of Covered Payroll	**(4.63)%**	**69.41%**	**73.08%**	**92.14%**	**65.26%**	**69.08%**	**81.06%**

(1) Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

(2) Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to $45,007,734 for fiscal year 2023.

(3) Based on derived compensation using the provided employer contribution information.

(4) Northern Trust Settlement.

This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of Changes in Employers' Net OPEB Liability - CERS Hazardous As of June 30 ($ in Thousands)

	2023	2022	2021	2020	2019	2018	2017
Total OPEB Liability							
Service Cost	$36,330	$52,265	$48,413	$47,443	$32,623	$33,948	$20,493
Interest on Total OPEB liability	130,614	120,640	116,710	115,998	116,768	118,009	113,166
Benefit Changes	-	44,909	1,146	-	-	484	-
Difference between Expected and Actual Experience	(646,006)	(7,814)	(47,937)	38,156	(103,317)	(100,348)	(2,470)
Assumption Changes	(31,947)	(176,969)	159,106	46,925	116,618	(2,500)	391,061
Benefit Payments [1] [2]	(92,433)	(94,957)	(86,277)	(83,874)	(76,059)	(71,325)	(63,656)
Net Change in Total OPEB Liability	**(603,442)**	**(61,926)**	**191,161**	**164,648**	**86,633**	**(21,732)**	**458,594**
Total OPEB Liability - Beginning	**2,374,457**	**2,436,383**	**2,245,222**	**2,080,574**	**1,993,941**	**2,015,673**	**1,557,079**
Total OPEB Liability - Ending (a)	**$1,771,015**	**$2,374,457**	**$2,436,383**	**$2,245,222**	**$2,080,574**	**$1,993,941**	**$2,015,673**
Plan Fiduciary Net Position							
Contributions – Employer [2]	$49,547	$66,320	$63,509	$59,662	$60,445	$51,615	$44,325
Contributions – Member	4,258	3,654	3,098	2,762	2,458	2,173	1,708
Benefit Payments [1] [2]	(92,433)	(94,957)	(86,277)	(83,874)	(76,059)	(71,325)	(63,656)
OPEB Plan Net Investment Income	150,671	(79,668)	326,905	2,315	73,317	109,854	143,892
OPEB Plan Administrative Expense	(522)	(502)	(528)	(462)	(434)	(376)	(381)
Other [4]	-	-	-	-	5	40	-
Net Change in Plan Fiduciary Net Position	**111,521**	**(105,153)**	**306,707**	**(19,597)**	**59,732**	**91,981**	**125,888**
Plan Fiduciary Net Position – Beginning	**1,522,671**	**1,627,824**	**1,321,117**	**1,340,714**	**1,280,982**	**1,189,001**	**1,063,113**
Plan Fiduciary Net Position – Ending (b)	**1,634,192**	**1,522,671**	**1,627,824**	**1,321,117**	**1,340,714**	**1,280,982**	**1,189,001**
Net OPEB Liability – Ending (a) – (b)	**$136,823**	**$851,786**	**$808,559**	**$924,105**	**$739,860**	**$712,959**	**$826,672**
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	92.27%	64.13%	66.81%	58.84%	64.44%	64.24%	58.99%
Covered Payroll [3]	$719,666	$668,667	$613,985	$596,001	$583,632	$588,526	$542,710
Net OPEB Liability as a Percentage of Covered Payroll	**19.01%**	**127.39%**	**131.69%**	**155.05%**	**126.77%**	**121.14%**	**152.32%**

[1] Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

[2] Employer contributions include expected benefits due to the implicit subsidy for members under age 65, equal to ($856,422) for fiscal year 2023.

[3] Based on derived compensation using the provided employer contribution information.

[4] Northern Trust Settlement.

This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of Changes in Employers' Net OPEB Liability - KERS Nonhazardous
As of June 30 ($ in Thousands)

	2023	2022	2021	2020	2019	2018	2017
Total OPEB Liability							
Service Cost	$43,199	$62,548	$58,831	$59,600	$61,345	$66,360	$46,992
Interest	200,910	190,531	191,624	179,811	186,820	191,178	192,911
Benefit Changes	3,209	21,884	1,382	-	-	1,865	-
Difference between Expected and Actual Experience	(1,440,201)	(37,249)	(231,631)	288,235	(302,189)	(191,147)	(3,921)
Changes of Assumptions	61,925	(206,907)	220,184	13,767	158,004	(11,235)	414,835
Benefit Payments [(1) (2)]	(128,228)	(153,081)	(141,143)	(159,841)	(148,112)	(148,236)	(139,601)
Net Change in Total OPEB Liability	**(1,259,186)**	**(122,274)**	**99,247**	**381,572**	**(44,132)**	**(91,215)**	**511,216**
Total OPEB Liability - Beginning	**3,576,530**	**3,698,804**	**3,599,557**	**3,217,985**	**3,262,117**	**3,353,332**	**2,842,116**
Total OPEB Liability - Ending (a)	**$2,317,344**	**$3,576,530**	**$3,698,804**	**$3,599,557**	**$3,217,985**	**$3,262,117**	**$3,353,332**
Plan Fiduciary Net Position							
Contributions – Employer [(2)(5)]	$156,543	$181,294	$223,661	$208,300	$201,155	$152,985	$162,636
Contributions – Member	8,358	6,547	6,318	6,128	5,963	5,786	5,156
Benefit Payments [(1) (2)]	(128,228)	(153,081)	(141,143)	(159,841)	(148,112)	(148,236)	(139,601)
OPEB Plan Net Investment Income	132,431	(88,998)	270,811	11,820	45,749	64,028	94,239
OPEB Plan Administrative Expense	(771)	(820)	(819)	(847)	(875)	(760)	(861)
Other [(4)]	-	-	-	-	4	32	-
Net Change in Plan Fiduciary Net Position	**168,333**	**(55,058)**	**358,828**	**65,560**	**103,884**	**73,835**	**121,569**
Plan Fiduciary Net Position – Beginning	**1,364,419**	**1,419,477**	**1,060,649**	**995,089**	**891,205**	**817,370**	**695,801**
Plan Fiduciary Net Position – Ending (b)	**1,532,752**	**1,364,419**	**1,419,477**	**1,060,649**	**995,089**	**891,205**	**817,370**
Net OPEB Liability – Ending (a) – (b)	**$784,592**	**$2,212,111**	**$2,279,327**	**$2,538,908**	**$2,222,896**	**$2,370,912**	**$2,535,962**
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	66.14%	38.15%	38.38%	29.47%	30.92%	27.32%	24.37%
Covered Payroll [(3)]	$1,653,492	$1,437,132	$1,452,345	$1,482,431	$1,515,953	$1,573,898	$1,593,097
Net OPEB Liability as a Percentage of Covered Payroll	**47.45%**	**153.93%**	**156.94%**	**171.27%**	**146.63%**	**150.64%**	**159.18%**

[(1)] Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

[(2)] Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to $27,435,836 for fiscal year 2023.

[(3)] Based on derived compensation using the provided employer contribution information.

[(4)] Northern Trust Settlement.

[(5)] Includes $2.4 million and $28.4 million employer cessation contribution for fiscal year 2022, and 2021, respectively.

This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of Changes in Employers' Net OPEB Liability - KERS Hazardous
As of June 30 ($ in Thousands)

	2023	2022	2021	2020	2019	2018	2017
Total OPEB Liability							
Service Cost	$9,435	$14,474	$13,633	$11,548	$12,337	$12,893	$8,002
Interest on Total OPEB liability	32,737	30,599	29,254	28,101	27,990	28,500	27,591
Benefit Changes	-	10,289	48	-	-	167	-
Difference between Expected and Actual Experience	(198,459)	(12,515)	(6,402)	27,668	(30,947)	(31,240)	(1,029)
Assumption Changes	(1,820)	(46,406)	42,022	11,428	31,687	(581)	89,401
Benefit Payments [(1)] [(2)]	(20,321)	(22,804)	(20,927)	(21,425)	(19,767)	(18,704)	(16,618)
Net Change in Total OPEB Liability	**(178,428)**	**(26,363)**	**57,628**	**57,320**	**21,300**	**(8,965)**	**107,347**
Total OPEB Liability - Beginning	**595,789**	**622,152**	**564,524**	**507,204**	**485,904**	**494,869**	**387,522**
Total OPEB Liability - Ending (a)	**$417,361**	**$595,789**	**$622,152**	**$564,524**	**$507,204**	**$485,904**	**$494,869**
Plan Fiduciary Net Position							
Contributions – Employer [(2)]	$2,282	$4,116	$3,556	$7,441	$5,556	$5,165	$4,579
Contributions – Member	1,584	1,227	1,167	1,105	934	909	811
Benefit Payments [(1)] [(2)]	(20,321)	(22,804)	(20,927)	(21,425)	(19,767)	(18,704)	(16,618)
OPEB Plan Net Investment Income	53,772	(27,929)	128,244	704	28,373	42,950	59,614
OPEB Plan Administrative Expense	(123)	(125)	(118)	(123)	(117)	(104)	(105)
Other [(4)]	-	-	-	-	2	18	-
Net Change in Plan Fiduciary Net Position	**37,194**	**(45,515)**	**111,922**	**(12,298)**	**14,981**	**30,234**	**48,281**
Plan Fiduciary Net Position – Beginning	**588,162**	**633,677**	**521,755**	**534,053**	**519,072**	**488,838**	**440,557**
Plan Fiduciary Net Position – Ending (b)	**625,356**	**588,162**	**633,677**	**521,755**	**534,053**	**519,072**	**488,838**
Net OPEB Liability – Ending (a) – (b)	**$(207,995)**	**$7,627**	**$(11,525)**	**$42,769**	**$(26,849)**	**$(33,168)**	**$6,031**
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	149.84%	98.72%	101.85%	92.42%	105.29%	106.83%	98.78%
Covered Payroll [(3)]	$223,922	$188,648	$172,725	$182,209	$151,448	$190,317	$171,087
Net OPEB Liability as a Percentage of Covered Employee Payroll	**(92.89)%**	**4.04%**	**(6.67)%**	**23.47%**	**(17.73)%**	**(17.43)%**	**3.53%**

[(1)] Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

[(2)] Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to $792,418 for fiscal year 2023.

[(3)] Based on derived compensation using the provided employer contribution information. For 2021, 2022, and 2023, derived compensation based on pension contribution information, as there were no required employer contributions for the insurance fund for FYE 2021, FYE 2022, and FYE 2023.

[(4)] Northern Trust Settlement.

This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of Changes in Employer's Net OPEB Liability - SPRS
As of June 30 ($ in Thousands)

	2023	2022	2021	2020	2019	2018	2017
Total OBEP Liability							
Service Cost	$4,092	$5,605	$5,218	$5,389	$4,816	$6,087	$4,147
Interest on Total OPEB liability	19,608	18,592	17,984	17,600	17,724	18,432	17,993
Benefit Changes	-	4,975	101	-	-	34	-
Difference between Expected and Actual Experience	(98,425)	(5,952)	(6,318)	13,810	(14,295)	(23,320)	(573)
Assumption Changes	404	(21,937)	21,784	4,578	16,483	(358)	57,312
Benefit Payments (1) (2)	(13,682)	(14,729)	(13,812)	(13,988)	(13,187)	(13,097)	(12,123)
Net Change in Total OPEB Liability	**(88,003)**	**(13,446)**	**24,957**	**27,389**	**11,541**	**(12,222)**	**66,756**
Total OPEB Liability - Beginning	**351,453**	**364,899**	**339,942**	**312,553**	**301,012**	**313,234**	**246,478**
Total OPEB Liability - Ending (a)	**$263,450**	**$351,453**	**$364,899**	**$339,942**	**$312,553**	**$301,012**	**$313,234**
Plan Fiduciary Net Position							
Contributions – Employer (2)	$8,755	$9,343	$9,381	$12,873	$12,623	$8,535	$7,862
Contributions – Member	348	230	209	196	176	155	131
Benefit Payments (1) (2)	(13,682)	(14,729)	(13,812)	(13,988)	(13,187)	(13,097)	(12,123)
OPEB Plan Net Investment Income	21,520	(10,847)	50,289	1,124	10,815	16,470	21,627
OPEB Plan Administrative Expense	(74)	(73)	(89)	(71)	(69)	(62)	(66)
Other (4)	-	-	-	-	1	8	-
Net Change in Plan Fiduciary Net Position	**16,867**	**(16,076)**	**45,978**	**134**	**10,359**	**12,009**	**17,431**
Plan Fiduciary Net Position – Beginning	**231,242**	**247,318**	**201,340**	**201,206**	**190,847**	**178,838**	**161,407**
Plan Fiduciary Net Position – Ending (b)	**248,109**	**231,242**	**247,318**	**201,340**	**201,206**	**190,847**	**178,838**
Net OPEB Liability – Ending (a) – (b)	**$15,341**	**$120,211**	**$117,581**	**$138,602**	**$111,347**	**$110,165**	**$134,396**
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	94.18%	65.80%	67.78%	59.23%	64.38%	63.40%	57.09%
Covered Payroll (3)	$65,830	$48,600	$47,155	$48,231	$48,780	$50,064	$48,873
Net OPEB Liability as a Percentage of Covered Payroll	**23.30%**	**247.35%**	**249.35%**	**287.37%**	**228.26%**	**220.05%**	**274.99%**

(1) Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

(2) Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to ($533,552) for fiscal year 2023.

(3) Based on derived compensation using the provided employer contribution information.

(4) Northern Trust Settlement.

This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

The actuarially determined contribution effective for fiscal year ending 2023 that is documented in the following schedule was calculated as of June 30, 2021. Separate contribution rates are determined for each fund based on the liabilities associated with the current active members, former inactive members, and members receiving benefits from each respective fund, as well as the separately maintained asset balances for each fund.

Based on the June 30, 2021, actuarial valuation report, the actuarial methods and assumptions used to calculate the required contributions follow.

Notes to Schedule of Employers' OPEB Contributions

Item	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
Determined by the Actuarial Valuation as of:	June 30, 2021	June 30, 2021	June 30, 2021	June 30, 2021	June 30, 2021
Actuarial Cost Method:	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal
Asset Valuation Method:	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized.	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized.	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized.	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized.	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized.
Amortization Method:	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay
Amortization Period:	30-year closed period at June 30, 2019 Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases.	30-year closed period at June 30, 2019 Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases.	30-year closed period at June 30, 2019 Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases.	30-year closed period at June 30, 2019 Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases.	30-year closed period at June 30, 2019 Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases.
Payroll Growth Rate:	2.00%	2.00%	0.00%	0.00%	0.00%
Investment Return:	6.25%	6.25%	6.25%	6.25%	6.25%
Inflation:	2.30%	2.30%	2.30%	2.30%	2.30%
Salary Increase:	3.30% to 10.30%, varies by service.	3.55% to 19.05%, varies by service.	3.30% to 15.30%, varies by service.	3.55% to 20.05%, varies by service.	3.55% to 16.05%, varies by service.
Mortality:	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.

Notes to Schedule of Employers' OPEB Contributions

Item	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
Healthcare Trend Rates:					
Pre-65	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.
Post-65	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.

Schedule of Employers' OPEB Contributions - CERS Nonhazardous
As of June 30 ($ in Thousands)

Fiscal Year Ending [1]	Actuarially Determined Contribution [2]	Total Employer Contribution [3]	Contribution Deficiency (Excess)	Covered Payroll [4]	Actual Contributions as a Percentage of Covered Payroll
2023	$101,122	$106,044	$(4,922)	$2,982,960	3.55%
2022	118,551	123,366	(4,815)	2,843,218	4.34%
2021	142,249	129,903	12,346	2,619,695	4.96%
2020	124,740	129,267	(4,527)	2,620,585	4.93%
2019	160,055	139,655	20,400	2,577,378	5.42%
2018	120,797	124,619	(3,822)	2,570,156	4.85%
2017	122,270	120,712	1,558	2,480,130	4.87%
2016	110,987	111,836	(849)	2,352,762	4.75%
2015	119,511	119,444	67	2,296,716	5.20%
2014	$130,652	$123,278	$7,374	$2,272,270	5.43%

[1] Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

[2] Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

[3] Employer contributions do not include the expected implicit subsidy included in the Schedule of Changes in Employer's Net OPEB Liability - CERS Nonhazardous.

[4] Based on derived compensation using the provided employer contribution information.

Schedule of Employers' OPEB Contributions - CERS Hazardous
As of June 30 ($ in Thousands)

Fiscal Year Ending [1]	Actuarially Determined Contribution [2]	Total Employer Contribution [3]	Contribution Deficiency (Excess)	Covered Payroll [4]	Actual Contributions as a Percentage of Covered Payroll
2023	$48,793	$50,404	$(1,611)	$719,666	7.00%
2022	58,375	59,905	(1,530)	668,667	8.96%
2021	60,539	59,799	740	613,985	9.74%
2020	56,739	57,897	(1,158)	596,001	9.71%
2019	71,028	62,272	8,756	583,632	10.67%
2018	55,027	56,002	(975)	588,526	9.52%
2017	53,131	51,537	1,594	542,710	9.50%
2016	64,253	67,619	(3,366)	492,851	13.72%
2015	69,103	71,778	(2,675)	483,641	14.84%
2014	$74,360	$74,792	-$432	$479,164	15.61%

[1] Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

[2] Actuarially determined contribution for fiscal year ended 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

[3] Employer contributions do not include the expected implicit subsidy included in the Schedule of Changes in Employer's Net OPEB Liability - CERS Hazardous.

[4] Based on derived compensation using the provided employer contribution information.

Schedule of Employers' OPEB Contributions - KERS Nonhazardous
As of June 30 ($ in Thousands)

Fiscal Year Ending [1]	Actuarially Determined Contribution [2]	Total Employer Contribution [3]	Contribution Deficiency (Excess)	Covered Payroll [4]	Actual Contributions as a Percentage of Covered Payroll
2023	$123,952	$129,108	$(5,156)	$1,653,492	7.81%
2022	135,809	140,694	(4,885)	1,437,132	9.79%
2021	161,936	186,676	(24,740)	1,452,345	12.85%
2020	183,821	175,007	8,814	1,482,431	11.81%
2019	187,978	178,964	9,014	1,515,953	11.81%
2018	132,365	136,419	(4,054)	1,573,898	8.67%
2017	133,024	152,356	(19,332)	1,593,097	9.56%
2016	121,899	135,816	(13,917)	1,529,249	8.88%
2015	130,455	135,940	(5,485)	1,544,234	8.80%
2014	$208,881	$166,610	$42,271	$1,577,496	10.56%

[1] Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

[2] Actuarially determined contribution for fiscal year ended 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

[3] Employer contributions do not include the expected implicit subsidy included in the Schedule of Changes in Employer's Net OPEB Liability - KERS Nonhazardous.

[4] Based on derived compensation using the provided employer contribution information.

Schedule of Employers' OPEB Contributions - KERS Hazardous
As of June 30 ($ in Thousands)

Fiscal Year Ending [1]	Actuarially Determined Contribution [2]	Total Employer Contribution [3]	Contribution Deficiency (Excess)	Covered Payroll [4]	Actual Contributions as a Percentage of Covered Payroll
2023	$-	$1,489	$(1,489)	$223,922	0.66%
2022	-	1,281	(1,281)	188,648	0.68%
2021	-	1,300	(1,300)	172,725	0.75%
2020	4,482	5,776	(1,294)	182,209	3.17%
2019	3,726	4,970	(1,244)	151,448	3.28%
2018	2,550	5,288	(2,738)	190,317	2.78%
2017	4,688	5,620	(932)	171,087	3.28%
2016	9,186	16,766	(7,580)	147,563	11.36%
2015	13,152	14,882	(1,730)	128,680	11.57%
2014	$15,627	$23,874	$(8,247)	$129,076	18.50%

[1] Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

[2] Actuarially determined contribution for fiscal year ended 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

[3] Employer contributions do not include the expected implicit subsidy included in the Schedule of Changes in Employer's Net OPEB Liability - KERS Hazardous.

[4] Based on derived compensation using the provided employer contribution information. For 2021, 2022, and 2023, derived compensation based on pension contribution information as there were no required employer contributions for the insurance fund for FYE 2021, FYE 2022 and FYE 2023.

Schedule of Employer's OPEB Contributions - SPRS
As of June 30 ($ in Thousands)

Fiscal Year Ending [1]	Actuarially Determined Contribution [2]	Total Employer Contribution [3]	Contribution Deficiency (Excess)	Covered Payroll [4]	Actual Contributions as a Percentage of Covered Payroll
2023	$9,289	$9,289	$-	$65,830	14.11%
2022	8,782	8,782	-	48,600	18.07%
2021	9,285	9,285	-	47,155	19.69%
2020	13,133	13,133	-	48,231	27.23%
2019	13,283	13,288	(5)	48,780	27.24%
2018	9,062	9,397	(335)	50,064	18.77%
2017	9,222	9,222	-	48,873	18.87%
2016	8,553	10,237	(1,684)	45,551	22.47%
2015	9,890	10,382	(492)	45,765	22.69%
2014	$20,879	$14,493	$6,386	$44,616	32.48%

[1] Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

[2] Actuarially determined contribution for fiscal year ended 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

[3] Employer contributions do not include the expected implicit subsidy included in the Schedule of Changes in Employer's Net OPEB Liability - SPRS.

[4] Based on derived compensation using the provided employer contribution information

Money-Weighted Rates of Return

In accordance with GASB, KPPA provides this additional disclosure regarding the money-weighted rate of return for the Pension Funds and Insurance Fund. The money-weighted rate of return is a method of calculating period-by-period returns on Pension Funds' and Insurance Fund's investments that adjusts for the changing amounts actually invested. For purposes of this statement, money-weighted rate of return is calculated as the internal rate of return on Pension Funds' and Insurance Fund's investments, net of Pension Funds' and Insurance Fund's investment expense, adjusted for the changing amounts actually invested.

See below for the money-weighted rates of return for multiple periods including fiscal year June 30, 2023, as calculated by the custodian bank, BNY Mellon:

Money - Weighted Rates of Return As of June 30					
	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
Pension					
2023	10.25%	10.35%	7.07%	9.46%	7.53%
2022	(5.83)%	(6.02)%	(5.29)%	(5.94)%	(5.80)%
2021	25.72%	25.58%	22.53%	25.21%	21.70%
2020	0.84%	0.71%	2.35%	0.96%	2.21%
2019	5.72%	5.76%	5.77%	5.68%	5.67%
2018	8.82%	8.82%	7.63%	8.69%	7.68%
2017	13.80%	13.72%	12.08%	13.45%	12.50%
2016	(0.62)%	(0.46)%	(0.97)%	(0.33)%	(1.76)%
2015	1.90%	1.95%	2.30%	1.84%	1.80%
2014	15.56%	15.50%	15.50%	15.65%	15.66%
Insurance					
	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
2023	10.32%	10.06%	9.89%	9.26%	9.44%
2022	(5.49)%	(4.95)%	(6.22)%	(4.43)%	(4.43)%
2021	24.81%	24.99%	25.16%	24.99%	25.36%
2020	0.36%	0.27%	0.98%	0.21%	0.64%
2019	5.73%	5.78%	5.04%	5.56%	5.73%
2018	9.22%	9.35%	7.95%	8.93%	9.39%
2017	13.67%	13.69%	13.77%	13.75%	13.69%

Note: This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Additional Supporting Schedules

Schedule of Administrative Expenses

Schedule of Direct Investment Expenses

Schedule of Professional Consultant Fees

Report on Internal Control

Schedule of Administrative Expenses As of June 30 ($ in Thousands)	2023	2022
Personnel		
Salaries and Per Diem	$16,432	$15,803
Pension, Insurance Related Benefits	16,534	16,165
Unemployment Compensation	9	-
Employee Training	11	10
Total Personnel	**32,986**	**31,978**
Contractual		
Actuarial Services	491	474
Audit Services	110	142
Human Resource Consulting	-	6
Legal Counsel	1,007	1,126
Medical Review Services	1,413	1,593
Miscellaneous	131	124
Total Contractual	**3,152**	**3,465**
Communication		
Printing	68	77
Telephone	113	123
Postage	352	377
Travel	84	32
Total Communication	**617**	**609**
Internal Audit		
Travel/Conferences	$2	2
Dues/Subscriptions	1	1
Miscellaneous	24	-
Total Internal Audit	**27**	**3**
Investments-Pension Funds		
Travel/Conferences	22	7
Dues/Subscriptions	13	13
Total Investments	**35**	**15**
Rentals		
Office Space	1,000	1,013
Equipment	90	92
Total Rentals	**1,090**	**1,103**
Information Technology		
Software	2,725	2,972
Total Information Technology	**2,725**	**2,972**
Miscellaneous		
Utilities	153	142
Supplies	71	83
Insurance	6	5
Dues & Subscriptions	61	52
Maintenance	1	-
Other	56	34
COVID Expenses	5	13
Total Miscellaneous	**353**	**336**
Depreciation/Amortization/Accruals	890	(739)
Total Pension Fund Administrative Expense	**41,875**	**39,742**
Healthcare Fees	2,427	2,454
Total Insurance Fund Administrative Expense	**2,427**	**2,454**
Total Contractual Services	**$44,302**	**$42,196**

Pension Fund Schedule of Direct Investment Expenses
As of June 30, 2023 ($ in Thousands)

	CERS		KERS		SPRS
	Nonhazardous	Hazardous	Nonhazardous	Hazardous	
Security Lending Fees					
Borrower (Income) Rebates	$7,904	$2,760	$2,525	$755	$426
Lending Agent Fees	164	57	59	17	9
Total Security Lending	**8,068**	**2,817**	**2,584**	**772**	**435**
Contractual Services					
Investment Management	51,121	17,180	14,788	4,806	2,155
Security Custody	743	256	298	77	51
Investment Consultant	306	105	120	32	21
Performance Fees	10,465	3,295	1,866	910	336
Total Contractual Services	**$62,635**	**$20,836**	**$17,072**	**$5,825**	**$2,563**

Insurance Fund Schedule of Direct Investment Expenses
As of June 30, 2023 ($ in Thousands)

	CERS		KERS		SPRS
	Nonhazardous	Hazardous	Nonhazardous	Hazardous	
Security Lending Fees					
Borrower (Income) Rebates	$2,414	$1,162	$969	$399	$169
Lending Agent Fees	54	26	23	9	4
Total Security Lending	**2,468**	**1,188**	**992**	**408**	**173**
Contractual Services					
Investment Management	18,972	9,925	7,229	3,850	1,521
Security Custody	390	192	172	74	29
Investment Consultant	116	57	50	22	9
Performance Fees	3,499	1,782	2,870	819	299
Total Contractual Services	**$22,977**	**$11,956**	**$10,321**	**$4,765**	**$1,858**

Schedule of Professional Consultant Fees
As of June 30 ($ in Thousands)

	2023	2022
Actuarial Services	$491	$474
Medical Review Services	1,413	1,593
Audit Services	110	142
Legal Counsel	1,007	1,126
Human Resource Consulting	-	6
Miscellaneous	131	124
Total	**$3,152**	**$3,465**

MIKE HARMON
AUDITOR OF PUBLIC ACCOUNTS

Report On Internal Control Over Financial Reporting And
On Compliance And Other Matters Based On An Audit Of Financial
Statements Performed In Accordance With *Government Auditing Standards*

Independent Auditor's Report

To the Members
Kentucky Public Pensions Authority

We have audited, in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of the Kentucky Public Pensions Authority (KPPA), as of and for the year ended June 30, 2023, and the related notes to the financial statements, which collectively comprise KPPA's basic financial statements, and have issued our report thereon dated November 27, 2023.

Report on Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered KPPA's internal control over financial reporting (internal control) as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of KPPA's internal control. Accordingly, we do not express an opinion on the effectiveness of KPPA's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees in the normal course of performing their assigned functions, to prevent, or detect and correct misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over financial reporting was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over financial reporting that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

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Report On Internal Control Over Financial Reporting
And On Compliance And Other Matters Based On An Audit Of Financial Statements
Performed In Accordance With *Government Auditing Standards*
(Continued)

Report on Compliance and Other Matters

As part of obtaining reasonable assurance about whether KPPA's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit and, accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Respectfully Submitted,

Farrah Petter, CPA
Assistant Auditor of Public Accounts
Frankfort, Ky

November 27, 2023

INVESTMENTS

TABLE OF CONTENTS

Investment Overview

This section of the report was compiled by KPPA investment staff using information provided by Wilshire Associates and the Bank of New York Mellon. Except otherwise noted, investment returns are based on investment asset fair value and calculated using time-weighted return calculation methodologies.

Investment returns play an important role at KPPA in terms of funding status of the plans and continued funding of operations. The Investment Committees of each Board of Trustees is committed to maximizing the long-term total rate of return on investments, given the appropriate level of risk, for the sole benefit of the members in the plans. The overall investment performance goal is to achieve an annualized rate of return which, when combined with employee and employer contributions, will meet or exceed the benefits and administrative funding requirements (see Investment Objectives later in this section).

Investments are managed by professional investment management firms and the KPPA Investment Staff based upon statutory investment authority, the investment policies adopted by the KRS Board of Trustees and the CERS Board of Trustees. The investment staff coordinates and monitors the investments of the trust assets and assists the Investment Committees in the formulation and implementation of investment policies and long-term investment strategy.

Asset Allocation and Diversification

The Trustees recognize that asset allocation is the primary driver of long-term investment performance and therefore review asset allocation on a regular basis. Asset allocation is a process designed to construct an optimal long-term asset mix that achieves a specific set of investment objectives. The Investment Policy Statement establishes the plans' asset allocation policy as designed to meet those objectives.

The asset allocation policies are adopted to provide for diversification of assets in an effort to maximize the long-term returns on investments consistent with prudent levels of market and economic risks. Of all the components of investment strategy formulation, the determination of asset allocation targets is the most important decision.

Risk is further diversified through active and passive management using multiple investment management firms and KPPA Investment Staff with a variety of investment styles. The total investment performance is not dependent upon the outcome of just one particular investment style or manager.

KPPA develops specific contractual investment guidelines for each external manager and each internally managed account that control the risk of high concentrations in a particular sector, industry, or security.

Diversification of the assets among various asset classes, investment management styles, and individual securities mitigates risk and enhances the potential of the investment portfolios to achieve their respective long-term objectives.

The following tables show each Plans' asset allocation targets as specified in their respective Investment Policy Statement and the actual asset allocation of the Plans as of June 30, 2023.

Board Policies vs. Actual Asset Allocation
As of June 30, 2023

Pension	Public Equity	Private Equity	Core Fixed Income	Specialty Credit	Cash	Real Estate	Real Return	Total Plan
CERS Nonhazardous Policy Target Asset Allocation	50.00%	10.00%	10.00%	10.00%	0.00%	7.00%	13.00%	100.00%
CERS Nonhazardous Actual Asset Allocation	50.46%	7.93%	10.22%	19.98%	1.97%	6.28%	3.16%	100.00%
CERS Hazardous Policy Target Asset Allocation	50.00%	10.00%	10.00%	10.00%	0.00%	7.00%	13.00%	100.00%
CERS Hazardous Actual Asset Allocation	50.41%	7.64%	10.25%	19.92%	2.95%	5.78%	3.05%	100.00%
KERS Nonhazardous Policy Target Asset Allocation	32.50%	7.00%	20.50%	15.00%	5.00%	10.00%	10.00%	100.00%
KERS Nonhazardous Actual Asset Allocation	33.66%	4.54%	20.72%	17.42%	16.45%	5.08%	2.13%	100.00%
KERS Hazardous Policy Target Asset Allocation	43.50%	10.00%	10.00%	15.00%	1.50%	10.00%	10.00%	100.00%
KERS Hazardous Actual Asset Allocation	43.88%	7.03%	12.15%	20.23%	8.31%	5.63%	2.77%	100.00%
SPRS Policy Target Asset Allocation	32.50%	7.00%	20.50%	15.00%	5.00%	10.00%	10.00%	100.00%
SPRS Actual Asset Allocation	32.83%	2.83%	20.76%	17.32%	20.75%	3.65%	1.86%	100.00%

NOTE: The actual asset allocations are calculated by taking the fair value of each asset class as a percentage of total portfolio for the plans combined.

Board Policies vs. Actual Asset Allocation
As of June 30, 2023

Insurance	Public Equity	Private Equity	Core Fixed Income	Specialty Credit	Cash	Real Estate	Real Return	Total Plan
CERS Nonhazardous Policy Target Asset Allocation	50.00%	10.00%	10.00%	10.00%	0.00%	7.00%	13.00%	100.00%
CERS Nonhazardous Actual Asset Allocation	50.55%	8.19%	10.24%	19.86%	2.58%	6.01%	2.57%	100.00%
CERS Hazardous Policy Target Asset Allocation	50.00%	10.00%	10.00%	10.00%	0.00%	7.00%	13.00%	100.00%
CERS Hazardous Actual Asset Allocation	50.99%	9.39%	9.52%	20.02%	0.59%	6.72%	2.77%	100.00%
KERS Nonhazardous Policy Target Asset Allocation	43.50%	10.00%	10.00%	15.00%	1.50%	10.00%	10.00%	100.00%
KERS Nonhazardous Actual Asset Allocation	44.51%	6.50%	12.11%	20.32%	10.13%	4.20%	2.23%	100.00%
KERS Hazardous Policy Target Asset Allocation	43.50%	10.00%	10.00%	15.00%	1.50%	10.00%	10.00%	100.00%
KERS Hazardous Actual Asset Allocation	44.22%	8.75%	12.11%	21.26%	3.40%	7.37%	2.89%	100.00%
SPRS Policy Target Asset Allocation	43.50%	10.00%	10.00%	15.00%	1.50%	10.00%	10.00%	100.00%
SPRS Actual Asset Allocation	44.71%	9.73%	11.63%	21.22%	2.93%	7.05%	2.73%	100.00%

NOTE: The actual asset allocations are calculated by taking the fair value of each asset class as a percentage of total portfolio for the plans combined.

Investment Strategies

Diversification

The Pension and Insurance portfolios are diversified on several levels, primarily through the use of the aforementioned asset class allocations. Asset allocations are evaluated on a periodic basis and represent an efficient allocation to maximize returns and minimize risks at a level appropriate for each system. The individual asset classes are diversified through the use of multiple portfolios that are managed by both the Office of Investments Staff and external Investment Managers. Finally, portfolios within each of the asset classes are diversified through both investment styles and the selection of individual securities. Each portfolio advisor is afforded discretion to diversify its portfolio(s) within the parameters established by the Boards.

Rebalancing

Proper implementation of the investment policy requires that a periodic adjustment, or rebalancing, of assets be made to ensure conformance with the IPS target levels. Such rebalancing is necessary to reflect sizable cash flows and performance imbalances among asset classes and investment advisors. The rebalancing policies call for a rebalancing to within its allocation ranges if an asset class exceeds or falls outside its allowable range as defined in the IPS.

Performance Review

At least once each quarter, the Investment Committees, on behalf of the Boards, review the performance of the portfolio to determine compliance with the IPS. The Investment Committees also review a report created and presented by the KPPA Compliance Officer. The Compliance Officer performs tests daily, monthly, and quarterly to assure compliance with the restrictions imposed by the IPS.

Investment Consulting

The Boards employ qualified independent industry leading external consultants to assist in asset allocation studies, asset allocation recommendations, manager searches and other investment related consulting functions. Consultants also provide performance reports covering both the internally managed and externally managed assets.

Investment Objectives

The Trustees recognize that as long-term investors, the primary aim is that the portfolios meet their performance objectives in the long- term while understanding that this may not necessarily occur in the short term. The overall investment performance goal is to achieve an annualized rate of return which, when combined with employee and employer contributions, will meet or exceed the benefits and administrative funding requirements The following descriptions represent general standards of measurement that will be used as guidelines for the various classes of investments and managers of the Plans.

Public Asset Class Allocations

Short-term: For periods less than five years or a full market cycle, the Asset Class Allocation should exceed the returns of the appropriate Index.

Intermediate & Long-term: For periods greater than five years or a full market cycle, the Asset Class Allocation should exceed the appropriate Index, compare favorably on a risk· adjusted basis, and generate returns that rank above the median return of a relevant peer group. Volatility, as measured by the standard deviation of monthly returns, should be comparable to the Index.

Individual Public Security Portfolios

Short-term: For periods less than five years or a full market cycle, individual portfolios should exceed the returns of their market goal or benchmark.

Intermediate & Long-term: For periods greater than five years or a full market cycle, individual portfolios should exceed the return of their market goal or benchmark, compare favorably on a risk-adjusted basis, and generate returns that rank above the median return of a relevant peer group. Volatility, as measured by the standard deviation of monthly returns, should be comparable to the benchmark.

Alternative Assets

Private Equity

The Private Equity portfolio should seek to achieve both short-term and intermediate/long term Net Internal Rate of Returns that provide yields in excess of core equity investments.

Short-term: Alternative investments should earn a Net Internal Rate of Return (IRR) that place the investment above the median Net IRR of other similar funds, of the same vintage year.

Intermediate & Long-term: The private equity portfolio should earn a return that meets or exceeds the Systems Private Equity Index. Individual private equity investments should earn a Net IRR above the median Net IRR of other similar funds, of the same vintage year.

Real Estate

Relative Return: The Real Estate portfolio is expected to generate returns, net of all fees and expenses, in excess of the National Council of Real Estate Investment Fiduciaries Open End Diversified Core Equity Index lagged 1 calendar quarter.

Absolute Return: The long-term real return objective for the Real Estate portfolio is five percent over the Barclays Capital U.S. 7-10 Year Treasury Bond Index, net of investment management fees.

Real Return

Short-term: For periods less than five years or a full market cycle, the allocation should achieve an annual rate of return that exceeds the appropriate benchmark (the weighted average return of the underlying investment benchmarks) annually over a complete market cycle, net of all investment management fees.

Strategic objective: For periods greater than five years or a full market cycle, the allocation should not only outperform the short-term benchmark, but also achieve a rate of return that exceeds CPI + 300 basis points.

Investment Results

For the purposes of this report, total return information has been reported net of investment manager fees and investment expenses with audited data since July 2011. At the manager or individual account level, returns have been reported net of fees since July 2011 and gross of fees are used for prior historical data. All rates of return are calculated using time-weighted rates of return.

Fiscal Year 2023 Results

Please see the tables below for the net returns reported for the fiscal year ended June 30, 2023.

Net Returns As of June 30, 2023 ($ in Thousands)

Pension Funds	Fair Value	% of Total	1 Year		3 Years		5 Years			10 Years		Inception	
			Plan	Index	Plan	Index	Plan	Index	GANIR	Plan	Index	Plan	Index
CERS	$8,693,826	52.03%	10.24%	9.54%	9.26%	8.83%	6.82%	6.55%	6.52%	7.27%	6.92%	8.85%	8.86%
CERS Hazardous	3,006,298	17.99%	10.33%	9.54%	9.18%	8.83%	6.76%	6.55%	6.68%	7.24%	6.92%	8.85%	8.86%
KERS	3,522,035	21.08%	6.96%	7.02%	7.52%	7.11%	6.11%	5.70%	5.61%	6.65%	6.44%	8.69%	8.74%
KERS Hazardous	898,809	5.38%	9.46%	8.70%	8.83%	9.01%	6.58%	6.66%	6.40%	7.14%	6.97%	8.82%	8.88%
SPRS	587,507	3.52%	7.58%	7.02%	7.68%	7.11%	6.17%	5.70%	6.09%	6.61%	6.41%	8.68%	8.73%
Total	**$16,708,475**	**100.00%**	**9.54%**	**8.88%**	**8.88%**	**8.46%**	**6.68%**	**6.41%**		**7.16%**	**6.90%**	**8.82%**	**8.86%**

Net Returns As of June 30, 2023 ($ in Thousands)

Insurance Funds	Fair Value	% of Total	1 Year		3 Years		5 Years		10 Years		Inception	
			Plan	Index	Plan	Index	Plan	Index	Plan	Index	Plan	Index
CERS	$3,274,939	45.52%	10.33%	9.54%	9.20%	8.62%	6.68%	6.28%	7.24%	6.90%	7.37%	7.56%
CERS Hazardous	1,606,040	22.32%	10.11%	9.54%	9.35%	8.62%	6.76%	6.28%	7.30%	6.90%	7.39%	7.56%
KERS	1,452,258	20.18%	9.87%	8.70%	8.88%	8.75%	6.46%	6.49%	6.85%	6.97%	7.26%	7.58%
KERS Hazardous	615,979	8.56%	9.29%	8.70%	9.25%	8.87%	6.65%	6.43%	7.17%	6.96%	7.35%	7.58%
SPRS	245,834	3.42%	9.46%	8.70%	9.43%	8.87%	6.88%	6.43%	7.35%	6.98%	7.40%	7.58%
Total	**$7,195,050**	**100.00%**	**10.15%**	**9.27%**	**9.22%**	**8.81%**	**6.70%**	**6.39%**	**7.21%**	**7.03%**	**7.36%**	**7.60%**

Benchmarks

The benchmarks are weighted averages that are composites of the various asset class indices that exist within each of the investment portfolios. The Modified Dietz Method, as its basis for calculations, is used to determine the performance of an investment portfolio based on a time weighted cash flow. The various asset class benchmarks are shown below:

Benchmarks and Allocation Guidelines
As of June 30, 2023

		Asset Allocation by Plan		
Index	**Asset Class**	**ALL CERS**	**KERS Nonhazardous/ SPRS Pension**	**KERS Hazardous Pension/KERS Nonhazardous, KERS Hazardous, and SPRS Insurance**
Equity				
MSCI ACWI	Public Equity	50.00%	32.50%	43.50%
Russell 3000 Quarter Lagged + 300 bps	Private Equity	10.00%	7.00%	10.00%
Fixed Income				
Bloomberg US Aggregate	Core Fixed Income	10.00%	20.50%	10.00%
50% Bloomberg US High Yield/50% Morningstar LSTA Leveraged Loan	Specialty Credit	10.00%	15.00%	15.00%
FTSE 3-Month US Treasury Bill	Cash	0.00%	5.00%	1.50%
Inflation Protected				
NCREIF ODCE	Real Estate	7.00%	10.00%	10.00%
US CPI + 3%	Real Return	13.00%	10.00%	10.00%

Note: These benchmarks are intended to be objective, measurable, investable/replicable, and representative of the investment mandates. The benchmarks are developed from publicly available information and accepted by the investment advisor and KPPA as the neutral position consistent with the investment mandate and status. KPPA Investment Staff and our Consultant recommend the indices and benchmarks, which are reviewed and approved by the Investment Committee and ratified by the KRS and CERS Boards. It is anticipated that as KRS and CERS funds continue to diversify through other markets and asset classes, both the Pension Funds' and Insurance Funds' total benchmarks will evolve to reflect these exposures.

Long-Term Results

The chart below displays the growth of $1,000 over the course of 10 years given the performance of the portfolios compared to the benchmark and the actuarial assumed rate of return. As of June 30, 2023, the actuarial rate of return for KERS Nonhazardous and SPRS pension was 5.25% and 6.25% for all other funds.

Since June 30, 2014, returns ranged from a minimum of (5.73)% in 2022 to a maximum of 25.00% in 2021. For fiscal year 2023, the annualized total net returns of each Plan exceeded their respective actuarially assumed rates of return. Translating these returns into dollars, a beginning balance of $1,000 in fiscal year 2014 would have a balance of $1,996 in fiscal year 2023. The annualized benchmark would have a balance of $1,961.

Pension Trust Growth
As of June 30 (in Whole $)

		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Pension Return		15.55%	2.01%	(0.52)%	13.47%	8.57%	5.83%	1.15%	25.00%	(5.73)%	9.54%
Performance BM		14.91%	3.13%	(0.19)%	13.28%	7.91%	6.00%	0.50%	24.07%	(5.76)%	8.88%
Actuarial Assumed ROR CERS Nonhazardous, CERS Hazardous and KERS Hazardous		7.75%	7.75%	7.50%	7.50%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%
Actuarial Assumed ROR KERS Nonhazardous and SPRS		7.75%	7.75%	7.50%	6.75%	5.25%	5.25%	5.25%	5.25%	5.25%	5.25%
Pension	$1,000	$1,156	$1,179	$1,173	$1,331	$1,445	$1,529	$1,546	$1,933	$1,822	$1,996
Performance Benchmark	1,000	1,149	1,185	1,183	1,340	1,446	1,533	1,540	1,911	1,801	1,961
Actuarial Assumed ROR CERS Nonhazardous, CERS Hazardous and KERS Hazardous	1,000	1,078	1,161	1,248	1,342	1,426	1,515	1,609	1,710	1,817	1,930
Actuarial Assumed ROR KERS Nonhazardous and SPRS	$1,000	$1,078	$1,161	$1,248	$1,332	$1,402	$1,476	$1,553	$1,635	$1,721	$1,811

The chart below shows theoretical annual returns for the Insurance portfolio since June 30, 2014, where returns range from a minimum of (5.34%) in 2022 to a maximum of 24.95% in 2021. As of June 30, 2023, the Insurance portfolio earned 10.15% versus the annualized benchmark return of 9.27%. The chart below indicates that with a beginning balance of $1,000 in fiscal year 2014, the Insurance portfolio would have a balance of $2,006 compared to the actuarially assumed rate of return balance of $1,930 and the annualized benchmark return would have a balance of $2,001 at the end of the 10-year period.

Insurance Trust
As of June 30 (in Whole $)

		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Return		14.89%	1.86%	(0.09)%	13.72%	9.05%	5.67%	0.48%	24.95%	(5.34)%	10.15%
Performance BM		15.03%	3.79%	0.03%	13.55%	8.48%	5.89%	0.13%	23.84%	(5.21)%	9.27%
Actuarial Assumed ROR		7.75%	7.75%	7.50%	7.50%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%
Insurance	$1,000	$1,149	$1,170	$1,169	$1,330	$1,450	$1,532	$1,540	$1,924	$1,821	$2,006
Performance Benchmark	1,000	1,150	1,194	1,194	1,356	1,471	1,558	1,560	1,932	1,831	2,001
Actuarial Assumed ROR	$1,000	$1,078	$1,161	$1,248	$1,342	$1,426	$1,515	$1,609	$1,710	$1,817	$1,930

Public Equity

For the fiscal year, the KPPA Pension Public Equity portfolio outperformed the benchmark by 121 basis points (bps), 17.74% versus the benchmark return of 16.53% (KPPA Insurance Public Equity: 17.60%). Relative outperformance was primarily driven by stock selection, most notably, broad outperformance across the international portion of the portfolio.

During the 12-months ending June 30, 2023, the KPPA Pension U.S. equity portion of the portfolio underperformed the R3000, 18.54% versus 18.95%; while the aggregate KPPA Insurance U.S. equity mandates returned 18.44%. Stock selection was solid across most strategies, especially within the mid, small, and microcap strategies. The only significant source of relative weakness came from the internal factor-based portfolio (11.31% vs 19.59%); however, this was less about stock selection and more about allocation tilts. The strategy's tilts, smaller in terms of market cap and towards value, weighed on relative performance (growth outpaced value by over 15%). Since inception, the Pension U.S. equity mandates have returned 11.30%, underperforming the benchmark by 9bps, while the Insurance U.S. equity mandates earned 9.92% annualized, outpacing the portfolio's benchmark by 2bps.

For the fiscal year, the KPPA Pension Non-U.S. equity mandates combined to outperform the MSCI ACWI Ex-US by 396bps, returning 16.43% versus 12.47%; while the aggregate KPPA Insurance international mandates returned 16.28%. Relative outperformance can best be attributed to broad based outperformance of the individual strategies. Most notably within the developed large cap and emerging market mandates (especially the dedicated value piece). Since inception, the Pension Non-U.S. equity mandates have returned 3.46%, underperforming the benchmark by 4bps, while the Insurance Non-U.S. equity mandates earned 3.44% annualized, outpacing the portfolio's benchmark by 60bps.

Return on Public Equity
As of June 30, 2023

	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
Public equity						
Pension	4/1/1984	17.74%	10.87%	7.55%	8.57%	10.21%
Performance Benchmark		16.53%	10.83%	7.52%	8.46%	10.05%
Insurance	7/1/1992	17.60%	10.88%	7.53%	8.62%	8.57%
Performance Benchmark		16.53%	10.81%	7.49%	8.47%	8.37%

Note: Current Pension and Insurance benchmarks are Global Equity: MSCI ACWI; US Equity: Russell 3000; Non-US Equity: MSCI ACWI Ex-US

Pension
Top 10 Public Equity Holdings
As of June 30, 2023 ($ in Thousands)

Company	Shares	Fair Value
APPLE INC	1,188,746	$230,581
ISHARES CORE S&P MIDCAP ETF	840,865	219,869
MICROSOFT CORP	597,830	203,585
LAZARD EMERG MKT EQY-INST	6,625,310	109,318
AMAZON.COM INC	717,712	93,561
NVIDIA CORP	198,845	84,115
ALPHABET INC	477,670	57,177
TESLA INC	216,610	56,702
META PLATFORMS INC	177,862	51,043
ALPHABET INC	410,886	49,705
Total	**11,452,336**	**$1,155,656**

Insurance
Top 10 Public Equity Holdings
As of June 30, 2023 ($ in Thousands)

Company	Shares	Fair Value
APPLE INC	530,743	$102,948
ISHARES CORE S&P MIDCAP ETF	381,139	99,660
MICROSOFT CORP	266,915	90,895
LAZARD EMERG MKT EQY-INST	3,059,536	50,483
AMAZON.COM INC	320,439	41,773
NVIDIA CORP	88,779	37,555
ALPHABET INC	213,267	25,528
TESLA INC	96,711	25,316
META PLATFORMS INC	79,411	22,789
ALPHABET INC	183,450	22,192
Total	**5,220,390**	**$519,139**

A complete list of holdings is located at https://kyret.ky.gov/Investments/Investments-Library/Pages/Investments-Holdings.aspx.

Core Fixed Income

For the fiscal year ended June 30, 2023, the Pension Core Fixed Income portfolio outperformed the benchmark by 2.21%, with a return of 1.27% compared to the Bloomberg U.S. Aggregate which returned (0.94)%. The Insurance Core Fixed Income portfolio posted a 1.14% rate of return, which outperformed the Bloomberg U.S. Aggregate Bond Index by 2.08%. Relative outperformance was driven by the shorter duration profile and tactical allocation to front end investment grade credit as rates rose and credit spreads tightened. Since inception, the Pension Core Fixed Income portfolio has outperformed the benchmark by 0.87%; while the Insurance Core Fixed Income portfolio has outperformed by 0.59% annually.

Return on Core Fixed Income
As of June 30, 2023

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
Pension	7/1/2013	1.27%	(0.35)%	2.23%	2.39%	2.39%
Performance Benchmark	7/1/2013	(0.94)%	(3.96)%	77.00%	1.52%	1.52%
Insurance	7/1/2013	1.14%	(0.48)%	2.06%	2.11%	2.11%
Performance Benchmark	7/1/2013	(0.94)%	(3.96)%	77.00%	1.52%	1.52%

Note: Pension and Insurance benchmark is Bloomberg US Aggregate.

Pension
2022 Top 10 Core Fixed Income Holdings
As of June 30, 2023 ($ in Thousands)

Issuer	Shares	Fair Value
U S TREASURY BILL	37,100,000	$36,151
U S TREASURY NOTE	15,221,000	14,883
U S TREASURY NOTE	14,935,000	14,604
CHARTER COMM OPERATING 10/19	10,597,562	10,585
U S TREASURY NOTE	9,905,000	9,779
CITIGROUP INC	10,053,000	9,596
SANTANDER DRIVE AUTO RECEI 6 B	9,365,000	9,160
US TREAS-CPI INFLAT	9,510,942	9,115
U S TREASURY NOTE	9,296,000	8,960
U S TREASURY NOTE	9,207,000	8,875
Total	**135,190,504**	**$131,708**

Insurance
Top 10 Core Fixed Income Holdings
As of June 30, 2023 ($ in Thousands)

Issuer	Shares	Fair Value
U S TREASURY BILL	11,535,000	$11,240
U S TREASURY NOTE	5,933,000	5,801
CHARTER COMM OPERATING 10/19	3,607,468	3,603
US TREAS-CPI INFLAT	3,506,255	3,360
CITIGROUP INC	3,391,000	3,237
SANTANDER DRIVE AUTO RECEI 6 B	3,300,000	3,228
U S TREASURY NOTE	3,139,000	3,026
US TREAS-CPI INFLAT	3,006,550	2,932
U S TREASURY NOTE	2,995,000	2,929
MICROCHIP TECHNOLOGY INC	2,907,000	2,895
Total	**43,320,273**	**$42,251**

Note: A complete list of holdings is located at https://kyret.ky.gov/Investments/Investments-Library/Pages/Investments-Holdings.aspx.

Specialty Credit

For the fiscal year ended June 30, 2023, the Pension Specialty Credit portfolio returned 7.16%, underperforming the benchmark by 2.78% which returned 9.94% for the year. The Insurance Specialty Credit portfolio posted a 7.37% rate of return, underperforming the benchmark by 2.57%. Since inception, the Pension and Insurance Specialty Credit portfolios have outperformed their respective benchmarks by 1.97% and 1.84%, respectively.

Return on Specialty Credit
As of June 30, 2023

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
Pension	7/1/2017	7.16%	7.72%	5.66%	N/A	5.70%
Performance Benchmark	7/1/2017	9.94%	4.76%	3.78%	N/A	3.73%
Insurance	7/1/2017	7.37%	7.78%	5.61%	N/A	5.57%
Performance Benchmark	7/1/2017	9.94%	4.76%	3.78%	N/A	3.73%

Note: Pension and Insurance benchmark is 50% Bloomberg US High Yield/50% Morningstar LSTA Leveraged Loan.

Pension
Top 10 Specialty Credit Holdings
As of June 30, 2023 ($ in Thousands)

Issuer	Fair Value
TRANSDIGM INC 144A	$3,688
INDONESIA TREASURY BOND	3,428
AMERICAN AIRLINES INC/AAD 144A	3,263
U S TREASURY NOTE	3,116
HUDBAY MINERALS INC 144A	2,975
U S TREASURY NOTE	2,973
MEDLINE BORROWER LP 144A	2,940
MEXICAN BONOS	2,771
UBER TECHNOLOGIES INC 144A	2,692
NFP CORP 144A	2,675
Total	**$30,519**

Insurance
Top 10 Specialty Credit Holdings
As of June 30, 2023 ($ in Thousands)

Issuer	Fair Value
TRANSDIGM INC 144A	$1,637
AMERICAN AIRLINES INC/AAD 144A	1,316
MEDLINE BORROWER LP 144A	1,269
HUDBAY MINERALS INC 144A	1,224
U S TREASURY NOTE	1,177
INDONESIA TREASURY BOND	1,158
NFP CORP 144A	1,152
UBER TECHNOLOGIES INC 144A	1,111
TABEO LLC	1,105
UNITED AIRLINES INC 144A	1,067
Total	**$12,216**

Note: A complete list of holdings is located at https://kyret.ky.gov/Investments/Investments-Library/Pages/Investments-Holdings.aspx.

Private Equity

For the fiscal year ended June 30, 2023, the Pension Private Equity portfolio posted a return of (1.55%), while the Insurance Private Equity portfolio returned 1.99%.The Investment Committee acknowledges the difficulty in assessing short term performance for Private Equity. Performance is typically based on quarterly estimates of each underlying business's value, and managers are often slow to mark valuations up or down. This can distort relative performance against a public market benchmark during periods when that index moves dramatically, such as fiscal year 2023. A better indication of program performance would be the mid- to longer-term time periods because more underlying company holdings have likely transacted at a specific (rather than estimated) valuation.

For the five years ended June 30, 2023, the Pension and Insurance Private Equity portfolios returned 13.91% and 13.25%, respectively. Over the past 10 years, the Pension portfolio trailed its benchmark by 1.57% but still produced a 13.39% return. The Insurance portfolio return of 14.42% was below its benchmark of 14.96%. Since inception in 2002, the Pension and Insurance portfolio's have reported a 11.82% return and a 10.96% return, respectively.

Return on Private Equity
As of June 30, 2023

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
Pension	7/1/2002	(1.55)%	19.70%	13.91%	13.39%	11.82%
Performance Benchmark		(5.58)%	21.56%	13.51%	14.96%	11.83%
Insurance	7/1/2002	1.99%	21.29%	13.25%	14.42%	10.96%
Performance Benchmark		(5.58)%	21.56%	13.51%	14.96%	11.39%

Note: Pension and Insurance Benchmark 5 years and beyond is the Russell 3000 Lagged + 300bps. For shorter term periods, the benchmark matches actual performance experienced.

Real Estate

For the fiscal year ended June 30, 2023, the Pension Real Estate portfolio saw returns of (2.69)%, exceeding its benchmark return of (3.91)%. The Insurance Real Estate portfolio also surpassed the benchmark, returning (3.06)% compared to (3.91)%. For the five years ending June 30, 2023, both the Pension and Insurance portfolios outperformed the benchmarks return by 3.82%and 3.73%, respectively.

Return on Real Estate
As of June 30, 2023

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
Pension	7/1/1984	(2.69)%	11.12%	10.38%	9.81%	6.64%
Performance Benchmark		(3.91)%	7.46%	6.56%	8.47%	6.47%
Insurance	5/1/2009	(3.06)%	10.84%	10.29%	9.76%	9.60%
Performance Benchmark		(3.91)%	7.46%	6.56%	8.47%	6.18%

Note: Pension and Insurance benchmark is NCREIF ODCE

Real Return

For the fiscal year ended June 30, 2023, the Pension Real Return portfolio returned 12.77%, outperforming its benchmark of 7.05%. The Insurance Real Return portfolio posted a return of 11.12%, also outperforming its benchmark return of 7.05% for the period. These returns were driven by strong returns from the portfolio's midstream energy assets. Since inception, the Pension and Insurance Real Return portfolios have outperformed their respective benchmarks by 0.70% and 0.42% respectively.

Return on Real Return
As of June 30, 2023

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
Pension	7/1/2011	12.77%	12.72%	6.42%	4.71%	4.83%
Performance Benchmark		7.05%	12.76%	6.45%	4.06%	4.13%
Insurance	7/1/2011	11.12%	11.64%	6.28%	4.54%	4.60%
Performance Benchmark		7.05%	11.94%	6.45%	4.11%	4.18%

Note: Pension and Insurance benchmark is Real Return Custom BM

Cash

For the fiscal year ended June 30, 2023, the Pension Cash portfolio returned 3.38%, underperforming its benchmark, the FTSE 3-Month US Treasury Bill by 0.37%. The Insurance Cash portfolio also underperformed the index, posting a return of 3.36% during the same 12-month period.

As the accompanying table indicates, longer-term Cash portfolios have performed well compared to their benchmark. For the ten years ending June 30, 2023, the Pension portfolio has outperformed its benchmark by 0.23% on an annualized basis. Since its inception, the Pension portfolio has exceeded its benchmark by 0.39%. The Insurance portfolio has also outperformed its benchmark return over the ten-year and since inception periods by 0.05% and 0.10%, respectively.

Return on Cash
As of June 30, 2023

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
Pension	1/1/1988	3.38%	1.24%	1.59%	1.21%	3.31%
Performance Benchmark		3.75%	1.33%	1.57%	0.98%	2.92%
Insurance	7/1/1992	3.36%	1.22%	1.48%	1.03%	2.45%
Performance Benchmark		3.75%	1.33%	1.57%	0.98%	2.35%

Note: Pension and Insurance benchmark is FTSE Treasury Bill-3 Month

Additional Schedules

The following schedules contain information on the assets under management for each firm KPPA employs and assets managed by KPPA Investment Staff, external investment-related expenses, commissions paid, and portfolio summaries for each of the five Pension and Insurance plans for the fiscal year ended June 30, 2023.

Investment Managers & Assets Under Management
Active Mandate- Alphabetical by Manager
As of June 30, 2023 ($ in Thousands)

Advisor	Assets Under Management
Internally Managed by KPPA	$6,450,344
Adams Street	398,733
American Century Investments	630,265
Arctos Sports	15,932
Arrowmark	791,520
Axiom	134,745
Barings Real Estate	73,237
Blue Torch	202,971
BlackRock ACWI Ex-US	1,244,103
Benefit Street Partners	190,165
CapitalSpring	109,111
Cerberus	264,646
Columbia Threadneedle Investments	651,672
Franklin Templeton	516,336
Harrison Street	379,873
IFM	100,191
JP Morgan Emerging Markets	208,991
Lazard Asset Management	733,778
Loomis, Sayles & Company	565,896
Lord Abbett & Co	1,949,208
LSV Asset Management	742,141
Manulife Investment Management	411,250
Marathon Asset Management	678,947
Mesa West	80,232
Middle Ground	237,081
New State	5,713
Next Century	209,484
NISA Investment Advisors	409,182
Northern Trust Global Investments	448,010
Prologis	446,942
Pzena Emerging Markets	250,520
River Road Asset Management	422,233
Shenkman Capital Management	368,954
Stockbridge	167,132
Strategic Value Partners	134,147
Tortoise	262,496
Waterfall Asset Management	417,598
Westfield Capital	501,881
White Oak Global Advisors	197,334
Assets Under Management	**$22,002,994**

Investment Managers & Assets Under Management
Managers With Terminated or Runoff Status - Alphabetical by Manager
As of June 30, 2023 ($ in Thousands)

Advisor	Assets Under Management
AMERRA	$88,701
Ares	28,047
Bay Hills	275,503
Black Diamond	105,788
Blackstone	34,598
BTG Pactual	37,653
Crestview	82,202
CVC	33,082
DAG Ventures	25,200
Fundamental	87,507
Leonard Green	127,529
Harvest Partners	66,848
H.I.G	32,732
Horsley Bridge	102,505
Kayne Anderson	52,281
Keyhaven	35,609
Levine Leichtman	123,208
Lubert-Adler	41,709
Patron	67,981
Prisma	138,330
Rubenstein	12,898
Triton	19,408
Vista Equity	101,914
Walton Street	29,707
Other	149,591
Assets Under Management	**1,900,531**
Total	**$23,903,525**

Note: Totals reflect external manager assets under management, therefore totals will differ from Total Fair Values.

Note: The managers have been separated by actively managed and terminated/runoff. Managers who are actively managed are either fully funded or are in the investment phase of the strategy. Managers who are in a terminated or runoff status are in the process of liquidation or are in the final investment phase awaiting payout. Managers who are in runoff or have been liquidated with a de minimis balance are reported as "Other".

Investment Managers & Assets Under Management by Fund and Asset Class
Pension Funds
As of June 30, 2023 ($ in Thousands)

Advisor/Asset Class	CERS Non-Hazardous	CERS Hazardous	KERS Non-Hazardous	KERS Hazardous	SPRS	KPPA Total
Core Fixed Income	**$1,060,135**	**$396,945**	**$1,309,194**	**$183,950**	**$243,898**	**$3,194,122**
Lord Abbett & Co.	595,920	206,712	489,491	73,257	81,828	1,447,208
Loomis, Sayles & Company Core	172,930	59,986	142,045	21,258	23,746	419,965
NISA Investment Advisors	119,377	41,409	98,057	14,675	16,392	289,910
Internally Managed by KPPA	171,908	88,838	579,601	74,760	121,932	1,037,039
Private Equity	**$642,586**	**$215,566**	**$140,853**	**$59,178**	**$14,991**	**$1,073,174**
Ares	12,576	4,292	-	1,138	359	18,365
Bay Hills	105,534	33,832	61,042	10,671	4,948	216,027
Black Diamond	42,958	14,662	-	3,887	1,225	62,732
Blackstone	13,217	6,382	45	1,142	3	20,789
Crestview	34,851	11,528	10,233	3,342	1,319	61,273
CVC	14,822	5,059	-	1,341	423	21,645
DAG Ventures	9,817	3,060	8,198	1,039	540	22,654
Leonard Green	44,536	17,609	501	3,831	33	66,510
Harvest Partners	25,138	7,701	-	2,111	45	34,995
H.I.G.	12,962	5,111	978	1,170	256	20,477
Horsley Bridge	39,945	12,435	33,444	4,229	2,201	92,254
Kayne Anderson	18,717	5,829	-	1,595	-	26,141
Keyhaven	14,264	4,729	3,904	1,362	531	24,790
Levine Leichtman	46,289	14,735	-	4,000	304	65,328
Middle Ground	101,195	32,636	13,647	9,005	1,570	158,053
New State	2,184	740	767	220	88	3,999
Strategic Value Partners	58,823	18,932	7,420	5,206	854	91,235
Triton	8,703	2,970	-	787	248	12,708
Vista	36,055	13,324	674	3,102	44	53,199
Public Equity	**$4,387,288**	**$1,515,428**	**$1,185,535**	**$394,373**	**$192,859**	**$7,675,483**
American Century Investments	245,257	85,081	67,689	22,884	11,982	432,893
Axiom	51,666	17,923	14,259	4,821	2,524	91,193
BlackRock ACWI Ex-US	502,146	175,794	115,064	40,723	15,946	849,673
Franklin Templeton	200,399	69,519	55,309	18,699	9,790	353,716
Lazard Asset Management	284,436	98,672	78,502	26,540	13,896	502,046
LSV Asset Management	287,533	99,746	79,357	26,829	14,047	507,512
Next Century	85,215	29,196	19,790	6,962	3,292	144,455
Northern Trust	182,037	62,369	42,276	14,871	7,032	308,585
River Road Asset Management	167,570	57,413	38,916	13,690	6,473	284,062
Westfield Capital	199,424	68,326	46,314	16,292	7,704	338,060
JP Morgan Emerging Markets	81,921	28,419	22,610	7,644	4,002	144,596
Pzena Emerging Markets	97,499	33,823	26,909	9,097	4,763	172,091
Internally Managed by KPPA	2,002,185	689,147	578,540	185,321	91,408	3,546,601
Real Estate	**$543,796**	**$173,041**	**$179,035**	**$50,381**	**$21,400**	**$967,653**
Barings Real Estate	28,842	9,120	9,577	2,620	1,107	51,266
Fundamental Partners	34,462	10,897	11,442	3,130	1,323	61,254
Harrison Street	145,075	45,377	51,993	12,884	6,147	261,476
Lubert-Adler	18,945	5,931	1,910	1,649	626	29,061
Patron	10,293	3,255	3,418	935	395	18,296
Mesa West	45,110	14,228	8,435	4,044	1,300	73,117
Prologis	180,184	56,976	59,826	16,366	6,918	320,270
Rubenstein	6,264	1,952	-	535	192	8,943

Stockbridge	59,533	18,984	26,196	5,215	2,527	112,455
Walton Street	13,406	4,489	4,358	1,462	500	24,215
Internally Managed by KPPA	1,682	1,832	1,880	1,541	365	7,300
Real Return	**$265,891**	**$88,872**	**$74,244**	**$24,136**	**$10,772**	**$463,915**
AMERRA	41,141	12,990	-	3,688	1,866	59,685
Arctos	5,353	2,294	2,485	64	637	10,833
BTG Pactual	17,959	5,755	-	1,550	717	25,981
IFM	39,745	13,687	11,701	3,604	1,397	70,134
Prisma	55,623	17,619	17,874	4,664	1,935	97,715
Tortoise	105,999	36,503	42,156	10,559	4,217	199,434
Internally Managed by KPPA	71	24	28	7	3	133
Specialty Credit	**$1,736,704**	**$598,727**	**$613,464**	**$181,854**	**$101,769**	**$3,232,518**
Adams Street	154,908	52,233	50,636	15,058	6,279	279,114
Arrowmark	299,730	99,086	87,645	27,173	10,826	524,460
Blue Torch	78,813	26,611	25,734	7,732	3,190	142,080
Benefit Street Partners	75,343	24,954	18,961	6,811	1,760	127,829
CapitalSpring	45,017	14,910	11,329	4,069	1,052	76,377
Cerberus	109,189	36,164	27,479	9,870	2,551	185,253
Columbia Threadneedle Investments	185,302	72,714	138,034	30,216	28,950	455,216
Manulife Investment Management	174,059	67,951	36,585	17,923	7,506	304,024
Marathon Asset Management	243,559	80,026	128,494	21,709	11,601	485,389
Shenkman Capital Management	134,546	45,350	24,819	20,533	9,549	234,797
Waterfall Asset Management	157,150	52,534	43,844	13,611	16,657	283,796
White Oak Global Advisors	79,088	26,194	19,904	7,149	1,848	134,183
Other	**$57,426**	**$17,719**	**$19,710**	**$4,937**	**$1,818**	**$101,610**
Total Assets Under Management	**$8,693,826**	**$3,006,298**	**$3,522,035**	**$898,809**	**$587,507**	**$16,708,475**

Investment Managers & Assets Under Management by Fund and Asset Class
Insurance Funds
As of June 30, 2023 ($ in Thousands)

Advisor/Asset Class	CERS Non-Hazardous	CERS Hazardous	KERS Non-Hazardous	KERS Hazardous	SPRS	KPPA Total
Core Fixed Income	**$420,096**	**$162,357**	**$323,022**	**$95,556**	**$35,795**	**$1,036,826**
Lord Abbett & Co.	219,437	99,962	115,088	48,803	18,710	502,000
Loomis, Sayles & Company Core	63,790	29,059	33,456	14,187	5,439	145,931
NISA Investment Advisors	52,137	23,750	27,344	11,596	4,445	119,272
Internally Managed by KPPA	84,732	9,586	147,134	20,970	7,201	269,623
Private Equity	**$248,225**	**$140,024**	**$89,824**	**$49,794**	**$22,354**	**$550,221**
Ares	5,517	2,984	-	728	453	9,682
Bay Hills	30,767	16,599	4,228	5,079	2,803	59,476
Black Diamond	24,533	13,270	-	3,238	2,015	43,056
Blackstone	7,563	4,526	7	1,161	552	13,809
Crestview	11,402	6,160	709	1,675	983	20,929
CVC	6,517	3,525	-	860	535	11,437
DAG Ventures	1,031	553	568	273	121	2,546
Leonard Green	29,259	17,577	5,681	5,967	2,535	61,019
Harvest Partners	13,525	8,090	5,402	3,458	1,378	31,853
H.I.G.	6,785	3,883	68	991	528	12,255
Horsley Bridge	4,130	2,211	2,316	1,103	491	10,251
Kayne Anderson	10,822	6,535	4,757	2,902	1,124	26,140
Keyhaven	5,965	3,224	270	852	508	10,819
Levine Leichtman	25,228	14,943	9,055	6,134	2,520	57,880
Middle Ground	22,551	11,726	37,230	5,391	2,130	79,028
New State	772	397	329	155	61	1,714
Strategic Value Partners	15,694	8,315	13,291	4,356	1,256	42,912
Triton	3,817	2,065	-	504	314	6,700
Vista	22,347	13,441	5,913	4,967	2,047	48,715
Public Equity	**$1,655,332**	**$818,974**	**$646,377**	**$272,367**	**$109,920**	**$3,502,970**
American Century Investments	90,100	44,149	40,578	15,886	6,659	197,372
Axiom	19,882	9,742	8,954	3,505	1,469	43,552
BlackRock	205,868	102,342	48,766	27,934	9,520	394,430
Franklin Templeton	74,236	36,376	33,433	13,089	5,486	162,620
Lazard Asset Management	105,785	51,835	47,643	18,651	7,818	231,732
LSV Asset Management	107,108	52,483	48,238	18,884	7,916	234,629
Next Century	31,045	15,788	11,318	4,896	1,982	65,029
Northern Trust	66,562	33,850	24,267	10,497	4,249	139,425
River Road Asset Management	65,963	33,546	24,048	10,403	4,211	138,171
Westfield Capital	78,209	39,773	28,512	12,334	4,993	163,821
JP Morgan Emerging Markets	29,396	14,404	13,239	5,183	2,173	64,395
Pzena Emerging Markets	35,803	17,543	16,125	6,312	2,646	78,429
Internally Managed by KPPA	745,375	367,143	301,256	124,793	50,798	1,589,365
Real Estate	**$196,063**	**$107,577**	**$60,735**	**$45,225**	**$17,265**	**$426,865**
Barings Real Estate	10,089	5,537	3,120	2,333	892	21,971
Fundamental Partners	12,055	6,616	3,728	2,788	1,066	26,253
Harrison Street	54,328	29,716	17,161	12,431	4,761	118,397
Lubert-Adler	5,826	3,177	1,794	1,343	508	12,648
Mesa West	23,106	12,755	6,404	5,394	2,026	49,685
Patron	3,267	1,793	1,010	756	289	7,115
Prologis	58,168	31,921	17,987	13,453	5,143	126,672
Rubenstein	1,825	992	560	420	158	3,955
Stockbridge	24,923	13,730	8,111	5,721	2,192	54,677

Walton Street	2,476	1,340	860	586	230	5,492
Real Return	**$81,721**	**$43,148**	**$31,164**	**$17,269**	**$6,502**	**$179,804**
AMERRA	13,437	7,418	3,857	3,128	1,176	29,016
Arctos	2,613	892	1,466	64	64	5,099
BTG Pactual	5,284	2,903	1,801	1,221	463	11,672
IFM	13,917	7,171	5,119	2,880	970	30,057
Prisma	18,179	10,185	6,404	4,252	1,595	40,615
Tortoise	28,165	14,514	12,461	5,698	2,224	63,062
Internally Managed by KPPA	126	65	56	26	10	283
Specialty Credit	**$650,513**	**$321,591**	**$295,123**	**$130,980**	**$52,176**	**$1,450,383**
Adams Street	54,239	28,654	21,037	11,317	4,372	119,619
Arrowmark	121,025	65,933	43,270	26,899	9,933	267,060
Blue Torch	27,573	14,493	10,886	5,722	2,217	60,891
Benefit Street Partners	27,857	15,193	10,590	6,394	2,302	62,336
CapitalSpring	14,628	7,978	5,561	3,358	1,209	32,734
Cerberus	35,480	19,350	13,487	8,144	2,932	79,393
Columbia Threadneedle Investments	88,956	33,320	51,530	16,306	6,344	196,456
Manulife Investment Management	54,709	23,758	22,649	976	5,134	107,226
Marathon Asset Management	85,275	46,613	34,167	20,444	7,059	193,558
Shenkman Capital Management	52,978	19,629	46,499	11,164	3,887	134,157
Waterfall Asset Management	59,572	31,278	24,719	13,778	4,455	133,802
White Oak Global Advisors	28,221	15,392	10,728	6,478	2,332	63,151
Other	**$22,989**	**$12,369**	**$6,013**	**$4,788**	**$1,822**	**$47,981**
Total Assets Under Management	**$3,274,939**	**$1,606,040**	**$1,452,258**	**$615,979**	**$245,834**	**$7,195,050**

External Investment Expenses - Pension Asset Class/Type Breakdown

For the fiscal year ending June 30, 2023 ($ in Thousands)

	Public Equity	Private Equity	Fixed Income	Specialty Credit	Cash	Real Return	Real Estate	Total
Fee for Long Balance	$7	$-	$-	$-	$-	$-	$-	$7
Securities Lending Fee Rebate	10,181	-	1,475	2,060	-	654	-	$14,370
Investment Advisory Fees	13,222	6,858	2,759	18,968	-	3,643	7,666	$53,116
Performance/Incentive Fees	-	(206)	-	18,303	-	1,788	(3,013)	$16,872
Securities Lending Fees	144	-	42	56	-	64	-	$306
Taxes and Insurance	-	609	-	-	-	-	-	$609
Administration	180	-	-	-	1,904	-	-	$2,084
Miscellaneous	28	3,429	-	28,288	-	1,007	1,424	$34,176
Commission on Future Contracts	3	-	52	3	-	-	-	$58
Consultant Fees	-	-	-	-	584	-	-	$584
Custodial Fees	-	-	-	-	1,425	-	-	$1,425
	$23,765	**$10,690**	**$4,328**	**$67,678**	**$3,913**	**$7,156**	**$6,077**	**$123,607**

External Investment Expenses - Insurance Asset Class/Type Breakdown

For the fiscal year ending June 30, 2023 ($ in Thousands)

	Public Equity	Private Equity	Fixed Income	Specialty Credit	Cash	Real Return	Real Estate	Total
Fee for Long Balance	$4	$-	$-	$-	$-	$-	$-	$4
Securities Lending Fee Rebate	3,449	-	627	831	-	206	-	$5,113
Investment Advisory Fees	6,115	4,438	1,028	8,251	-	1,646	3,468	$24,946
Performance/Incentive Fees	-	960	-	8,673	-	809	(1,173)	$9,269
Securities Lending Fees	59	-	14	23	-	20	-	$116
Taxes and Insurance	-	306	-	-	-	-	-	$306
Administration	81	-	-	-	827	-	-	$908
Miscellaneous	12	1,608	-	12,578	-	504	611	$15,313
Commission on Future Contracts	1	-	18	1	-	-	-	$20
Consultant Fees	-	-	-	-	254	-	-	$254
Custodial Fees	-	-	-	-	857	-	-	$857
	$9,721	**$7,312**	**$1,687**	**$30,357**	**$1,938**	**$3,185**	**$2,906**	**$57,106**

The Governmental Accounting Standards Board recognizes that it may not be possible or cost-beneficial to separate certain investment expenses from either the related investment income or the general administrative expenses of the plan. KPPA has displayed all investment related fees and expenses identifiable and captured by our custodial bank, BNY Mellon and KPPA staff.

External Expenses

For the fiscal year ending June 30, 2023 ($ in Thousands)

Expense	Fees Paid	Share of Total
Portfolio Management		
Pension Funds	$106,922	59.17%
Insurance Fund	50,766	28.09%
Securities Lending		
Pension Funds	14,676	8.12%
Insurance Fund	5,229	2.90%
Custody		
Pension Funds	1,425	0.79%
Insurance Fund	857	0.47%
Consultant		
Pension Funds	584	0.32%
Insurance Fund	254	0.14%
Total Pension Funds	**123,607**	**68.40%**
Total Insurance Fund	**57,106**	**31.60%**
Total Expenses	**$180,713**	**100.00%**

Schedule of Commissions Paid (in whole $)

For the fiscal year ending June 30, 2023

Assets	Total Shares	Commissions Paid	Price per Share
U.S. Equities	44,926,514	$829,621	0.0185
Non U.S. Equities	261,291,961	$1,256,670	0.0048
Total	**306,218,475**	**$2,086,291**	**0.01**

Fair Values (FV) - Pension Funds
As of June 30, 2023 ($ in Thousands)

	CERS Nonhazardous		CERS Hazardous		KERS Nonhazardous		KERS Hazardous	
	Fair Value	% of Total FV	Fair Value	% of Total FV	Fair Value	% of Total FV	Fair Value	% of Total FV
Assets								
Equity								
Public Equity	$4,387,287	50.46%	$1,515,428	50.41%	$1,185,535	33.66%	$394,373	43.88%
Private Equity	689,035	7.93%	229,769	7.64%	159,851	4.54%	63,181	7.03%
Fixed Income								
Core Fixed Income	888,421	10.22%	308,173	10.25%	729,672	20.72%	109,211	12.15%
Specialty Credit	1,736,726	19.98%	598,736	19.92%	613,468	17.42%	181,856	20.23%
Cash	171,714	1.97%	88,772	2.95%	579,522	16.45%	74,740	8.31%
Inflation Protected								
Real Return	274,708	3.16%	91,713	3.05%	74,952	2.13%	24,885	2.77%
Real Estate	545,935	6.28%	173,707	5.78%	179,035	5.08%	50,563	5.63%
TOTAL PORTFOLIO	**$8,693,826**		**$3,006,298**		**$3,522,035**		**$898,809**	

Fair Values (FV) - Insurance Funds
As of June 30, 2023 ($ in Thousands)

	CERS Nonhazardous		CERS Hazardous		KERS Nonhazardous		KERS Hazardous	
	Fair Value	% of Total FV	Fair Value	% of Total FV	Fair Value	% of Total FV	Fair Value	% of Total FV
Assets								
Equity								
Public Equity	$1,655,332	50.55%	$818,974	50.99%	$646,377	44.51%	$272,367	44.22%
Private Equity	268,197	8.19%	150,751	9.39%	94,391	6.50%	53,886	8.75%
Fixed Income								
Core Fixed Income	335,463	10.24%	152,820	9.52%	175,932	12.11%	74,605	12.11%
Specialty Credit	650,533	19.86%	321,600	20.02%	295,131	20.32%	130,980	21.26%
Cash	84,633	2.58%	9,538	0.59%	147,091	10.13%	20,951	3.40%
Inflation Protected								
Real Return	84,098	2.57%	44,445	2.77%	32,410	2.23%	17,822	2.89%
Real Estate	196,683	6.01%	107,912	6.72%	60,926	4.20%	45,368	7.37%
TOTAL PORTFOLIO	**$3,274,939**		**$1,606,040**		**$1,452,258**		**$615,979**	

Fair Values (FV) - Pension Funds
As of June 30, 2023 ($ in Thousands)

	SPRS		Total	
	Fair Value	**% of Total FV**	**Fair Value**	**% of Total FV**
Assets				
Equity				
Public Equity	$192,859	32.83%	$7,675,482	45.94%
Private Equity	16,598	2.83%	1,158,434	6.93%
Fixed Income				
Core Fixed Income	121,978	20.76%	2,157,455	12.91%
Specialty Credit	101,770	17.32%	3,232,556	19.35%
Cash	121,919	20.75%	1,036,667	6.20%
Inflation Protected				
Real Return	10,917	1.86%	477,175	2.86%
Real Estate	21,466	3.65%	970,706	5.81%
TOTAL PORTFOLIO	**$587,507**		**$16,708,475**	

Fair Values (FV) - Insurance Funds
As of June 30, 2023 ($ in Thousands)

	SPRS		Total	
	Fair Value	**% of Total FV**	**Fair Value**	**% of Total FV**
Assets				
Equity				
Public Equity	$109,920	44.71%	$3,502,970	48.68%
Private Equity	23,923	9.73%	591,148	8.22%
Fixed Income				
Core Fixed Income	28,602	11.63%	767,422	10.67%
Specialty Credit	52,177	21.22%	1,450,421	20.16%
Cash	7,194	2.93%	269,407	3.74%
Inflation Protected				
Real Return	6,699	2.73%	185,474	2.58%
Real Estate	17,319	7.05%	428,208	5.95%
TOTAL PORTFOLIO	**$245,834**		**$7,195,050**	

ACTUARIAL

TABLE OF CONTENTS

GRS Retirement Consulting

Certification of Actuarial Results

Re: Certification for the Actuarial Results as of June 30, 2023.

Dear Boards of Trustees:

Actuarial valuations are prepared annually as of June 30, for the County Employees Retirement System (CERS), the Kentucky Employees Retirement System (KERS), and the State Police Retirement System (SPRS). These reports describe the current actuarial condition of the Systems and document the calculated employer contribution requirements as well as the changes in the financial condition since the prior actuarial valuation.

Under Kentucky Statute, the Board of Trustees of the Kentucky Retirement System (KRS) must recommend the employer contribution requirement for KERS and SPRS for the fiscal years beginning July 1, 2024 and ending June 30, 2026. The Board of Trustees of the County Employees Retirement System must certify the employer contribution rates for CERS for the fiscal year beginning July 1, 2024 and ending June 30, 2025. The contribution requirements determined by June 30, 2023 actuarial valuations are intended to become effective twelve months after the valuation date and, as such, are intended to be used by the Board for recommending these required contributions effective July 1, 2024.

These contributions are calculated based on the membership data and plan assets as of June 30, 2023. These calculations are also based on the benefit provisions in effect as of June 30, 2023.

FINANCING OBJECTIVES AND FUNDING POLICY

The Kentucky Public Pensions Authority (KPPA) administers pension and health insurance funds to provide for monthly retirement income and retiree health insurance benefits. The total employer contribution requirement is comprised of a contribution to each respective fund.

The employer contribution is determined in accordance with Section 61.565 of Kentucky Statute. As specified by the Statute, the employer contribution is comprised of a normal cost contribution and an actuarial accrued liability contribution. The actuarial accrued liability contribution is calculated by amortizing the unfunded accrued liability as of June 30, 2019 over a closed 30-year amortization period (26 years remaining as of June 30, 2023). Gains and losses incurring in years after June 30, 2019 are amortized as separate, closed 20-year amortization bases.

If the contributions made are equal to the Actuarially Determined Contribution (ADC), and if all actuarial assumptions are met, there will not be an unfunded accrued liability at the end of the 26-year period remaining from the original closed 30-year amortization base. Accordingly, the ADC under the funding policy can be considered a “Reasonable Actuarially Determined Contribution” as required by the Actuarial Standards of Practice.

House Bill 8 passed during the 2021 legislative session and changed how employer contributions are allocated and collected from the participating employers in the KERS non-hazardous fund. Each employer will pay a normal cost contribution on the payroll of their covered employees and contribute to the fund an allocated share of the cost required to amortize the unfunded liability.

HB 1 and HB 604 were enacted in the 2022 legislative session and provided an additional $135 million and $105 million in appropriations to finance the unfunded actuarial accrued liability in the KERS non-hazardous retirement fund in FY 2023 and FY 2024. The previous year’s valuation reflected the appropriations for FY 2023 in the calculated contribution requirement, and the appropriations for FY 2024 have been reflected in the contribution requirement in this year’s valuation.

PROGRESS TOWARD REALIZATION OF FINANCING OBJECTIVES

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a plan's funded status. In the absence of benefit improvements, assumption changes, or actuarial losses, it should increase over time, until it reaches at least 100%. As of June 30, 2023, the funded ratios for the pension and health insurance funds are as follows:

Funding Level
As of June 30

	2023		2022		2021		2020		2019	
System	Pension	Insurance	Pension	Insurance	Pension	Insurance	Pension	Insurance	Pension	Insurance
CERS Nonhazardous	56.1%	131.5%	52.0%	132.1%	51.8%	85.4%	49.4%	78.5%	49.1%	70.7%
CERS Hazardous	51.4%	100.7%	47.6%	101.0%	46.7%	84.3%	45.1%	78.2%	45.3%	75.8%
KERS Nonhazardous	21.8%	81.7%	18.5%	79.1%	16.8%	50.2%	14.2%	42.7%	13.4%	36.3%
KERS Hazardous	65.4%	170.4%	63.2%	172.2%	60.4%	135.5%	55.3%	126.0%	54.8%	123.1%
SPRS	54.0%	100.5%	52.5%	100.6%	30.7%	82.0%	28.1%	75.0%	27.0%	71.3%

ASSUMPTIONS AND METHODS

The Boards of Trustees, in consultation with the actuary, set the actuarial assumptions and methods used in the actuarial valuation. An experience study was conducted after the June 30, 2022 actuarial valuation and the Board adopted updated assumptions for use in this actuarial valuation.

The updated assumptions include:

Demographic Assumptions:

- Post-retirement mortality rates were updated based on KPPA experience.
- Mortality improvement assumption was updated to the ultimate rates of the MP-2020 mortality improvement scale.
- Rates of termination prior to retirement were increased.
- Rates of disability incidence for the KERS non-hazardous fund and CERS funds were decreased.
- The percentage of members assumed to cover spouses in the retiree health insurance plan at retirement was increased for the SPRS fund.

Economic Assumptions:

- The rate of inflation was increased from 2.30% to 2.50%.
- The salary productivity assumption was reduced by 0.20%, resulting in no change in the salary increase assumption for long-service employees of 3.30% in the non-hazardous funds and 3.55% in the hazardous funds.
- The individual rates of salary increases were increased during the select period for the CERS funds.
- The investment return assumption for the CERS pension funds and all insurances funds was increased from 6.25% to 6.50%.
- The Tier 3 cash balance interest crediting rate assumption was increased to 5.90% for the KERS non-hazardous and SPRS pension funds and to 6.75% for the KERS hazardous and CERS pension funds.

In our opinion, all the assumptions and methods adopted by the Boards Trustees satisfy the requirements in the Actuarial Standards of Practice that are applicable for actuarial valuations of public retirement systems.

It is our opinion that the actuarial assumptions used to perform these valuations are internally consistent and reasonably reflect the anticipated future experience of the Systems. The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can, and almost certainly will, differ as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution requirements, and funding periods. The actuarial calculations are intended to provide information for rational decision making.

ADDITIONAL DISCLOSURES

The benefit structure is outlined in this section of the annual report. GRS prepared the following schedules in the actuarial section: *Summary of Actuarial Valuation Results*, *Recommended Employer Contribution Rates, Summary of Actuarial Unfunded Liabilities, the Solvency Test, the Summary of Active Member Valuation Data, the Summary of Retired Member Valuation Data, Summary of the Assumptions and Methods, and the Summary of the Benefit Provisions*.

In addition, GRS prepared the following schedules in the financial section in accordance with GASB Statement No. 67: *Net Pension Liability Schedule*, *Discount Rate Sensitivity Analysis*, *Schedule of Changes in the Employers' Net Pension Liability*, *Schedule of Employers' Net Pension Liability*, and the *Schedule of Employers' Contributions*.

DATA

Member data for retired, active and inactive members was supplied as of June 30, 2023, by KPPA staff. The staff also supplied asset information as of June 30, 2023. We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent with the prior year's data. GRS is not responsible for the accuracy or completeness of the information provided to us by KPPA.

CERTIFICATION

We certify that the information presented herein is accurate and fairly portrays the actuarial position of the Retirement Systems as of June 30, 2023. All of our work conforms with generally accepted actuarial principles and practices, and in conformity with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of Kentucky Code of Laws and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All three of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

Gabriel, Roeder, Smith & Co.

Daniel J. White, FSA, MAAA, EA
Senior Consultant

Janie Shaw, ASA, MAAA
Consultant

Krysti Kiesel, ASA, MAAA
Senior Analyst and Actuary

Summary of Actuarial Assumptions

The results of the actuarial valuation are based upon the assumptions and funding policies adopted by the Boards and statutory funding requirements. Assumptions and funding policies are reviewed against actual plan experience at least once every five years through the completion of the Actuarial Experience Study. In general, the assumptions and methods used in the June 30, 2023 valuation are based on the most recent actuarial experience study performed as of June 30, 2022, submitted, and adopted by the Boards in May and June 2023.

1. Actuarial Cost Method: The actuarial valuation was prepared using the entry age normal cost (EANC) method as required by state statute. Under this method, the present value of future benefits is determined for each member and allocated equitably as a level percentage of payroll from the member's entry age into the plan to the assumed age of exit from the plan. The portion of the present value of future benefits allocated to the current valuation year is called the normal cost. The portion of the present value of future benefits allocated to prior years of service is called the actuarial accrued liability. The unfunded actuarial accrued liability represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. Relative to the pension fund and the insurance fund, an employer contribution has been established to pay for both the normal cost and the amount needed to amortize the unfunded actuarial accrued liability (UAAL).

2. UAAL Amortization Method: Effective for the June 30, 2019 valuation, the actuarial accrued liability contribution is calculated by amortizing the unfunded accrued liability as of June 30, 2019 over a closed 30-year amortization period. Gains and losses incurring in future years are amortized as separated closed 20-year amortization bases. This amortization cost is calculated using a 0.00% payroll growth assumption for the KERS and SPRS Funds and a 2.00% payroll growth assumption for the CERS Funds. Effective for fiscal years ending June 30, 2022 and later, the amortization cost for the KERS Nonhazardous funds is allocated amongst employers as a dollar amount based on the employers' actuarial accrued liability as of June 30, 2019. The amortization cost for the remaining funds is divided by covered payroll and included in the contribution rate, payable by employers as a percentage of pay.

3. Asset Valuation Method: The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the investment return assumption. The amount recognized each year is 20% of the difference between market value and expected market value.

4. Retiree Insurance Funding Policy: Effective for the June 30, 2019 valuation, the actuarial accrued liability contribution is calculated by amortizing the unfunded accrued liability as of June 30, 2019, over a closed 30-year amortization period. Gains and losses incurring in future years are amortized as separated closed 20-year amortization bases. This amortization cost is calculated using a 0.00% payroll growth assumption for the KERS and SPRS Funds and a 2.00% payroll growth assumption for the CERS Funds. Effective for fiscal years ending June 30, 2022 and later, the amortization cost for the KERS Nonhazardous funds is allocated amongst employers as a dollar amount based on the employers' actuarial accrued liability as of June 30, 2019. The amortization cost for the remaining funds is divided by covered payroll and included in the contribution rate, payable by employers as a percentage of pay.

5. Investment Return Assumption: The future investment earnings of plan assets are assumed to accumulate at a rate of 6.50% per annum for the CERS Nonhazardous Retirement System, the CERS Hazardous Retirement System, and all Insurance Systems. This rate consists of a 2.50% price inflation component and a 4.00% real rate of return component. The assumed rate of return for the KERS Hazardous pension fund is 6.25% and consists of a 2.50% inflationary component and a 3.75% real rate of return component. The assumed rate of return for the KERS Nonhazardous pension fund and the SPRS pension fund is 5.25% and consist of a 2.50% inflationary component and a 2.75% real rate of return component. This assumption was adopted in 2023.

6. Salary Increase Assumptions: Active member salaries are assumed to increase at the rates provided in Table 1. The rates include a price inflation and productivity component, and an additional increase due to promotion based upon plan experience. The price inflation component is 2.50% for all plans and the productivity component is 0.80% for the nonhazardous systems and 1.05% for the hazardous systems. This assumption was adopted in 2023.

Table 1. Salary Increase Assumptions

Service	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
0	10.30%	19.05%	15.30%	20.05%	16.05%
1	7.30%	9.05%	6.80%	7.55%	8.55%
2	6.30%	7.05%	6.05%	6.55%	7.55%
3	5.30%	6.05%	5.80%	6.55%	5.55%
4	5.05%	5.80%	5.30%	5.55%	5.55%
5	4.80%	5.55%	4.80%	5.05%	5.55%
6	4.55%	5.55%	4.55%	4.55%	5.55%
7	4.30%	5.05%	4.30%	4.05%	4.55%
8	4.05%	5.05%	4.05%	4.05%	4.55%
9	4.05%	4.55%	3.80%	3.55%	3.55%
10	3.80%	4.55%	3.80%	3.55%	3.55%
11	3.80%	4.05%	3.30%	3.55%	3.55%
12	3.55%	4.05%	3.30%	3.55%	3.55%
13	3.55%	4.05%	3.30%	3.55%	3.55%
14	3.55%	3.80%	3.30%	3.55%	3.55%
15+	3.30%	3.80%	3.30%	3.55%	3.55%
16+	3.30%	3.55%	3.30%	3.55%	3.55%

7. Health Care Cost Trend Rate:

The costs for retiree medical premiums are assumed to increase according to the assumptions provided in Table 2.

Table 2: Health Care Cost Trend Rate (See footnotes 1-2)

Year	Non-Medicare Plans (1)	Medicare Plans (1)	Dollar Contribution (2)
2025	6.80%	8.50%	1.50%
2026	6.55%	8.00%	1.50%
2027	6.30%	8.00%	1.50%
2028	6.05%	8.00%	1.50%
2029	5.80%	7.50%	1.50%
2030	5.55%	7.00%	1.50%
2031	5.30%	6.50%	1.50%
2032	5.05%	6.00%	1.50%
2033	4.90%	5.50%	1.50%
2034	4.75%	5.00%	1.50%
2035	4.60%	4.50%	1.50%
2036	4.45%	4.05%	1.50%
2037	4.30%	4.05%	1.50%
2038+	4.05%	4.05%	1.50%

(1) All increases are assumed to occur on January 1. The 2024 premiums were known at the time of the June 30, 2023, valuation and were incorporated into the liability measurement.

(2) Applies to members participating on or after July 1, 2003. All increases are assumed to occur on July 1.

8. Payroll Growth Assumption: For purposes of determining the amortization cost to finance the unfunded actuarial accrued liability, the active member payroll (or amortization payments for the KERS Nonhazardous fund) is assumed to increase at a rate of 0.00% per year for KERS (Nonhazardous and Hazardous) and SPRS and the active member payroll in CERS (Nonhazardous and Hazardous) is assumed to increase at the rate of 2.00% per annum. This assumption was adopted in 2017.

9. Retiree Cost of Living Adjustments (COLA): SB2 only allows the Cost of Living Adjustments (COLAs) to be awarded on a biennial basis if the State Legislature so authorizes and either (i) the system is over 100% funded or (ii) the Legislature appropriates sufficient funds to pay the increased liability for the COLA.

10. Retirement Rate Assumptions: The probability, or the likelihood, that a member will retire at a specified age or level of service is provided in Table 3. These assumptions were adopted in 2023.

Table 3a: Retirement Rate Assumptions CERS (See footnotes 1 - 3)

	Nonhazardous				Hazardous			
	CERS Normal Retirement		CERS Early Retirement(1)			CERS Members Participating before	CERS Members Participating between 9/1/2008 and	CERS Members Participating after
Age	Male	Female	Male	Female	Service	9/1/2008(2)	1/1/2014(3)	1/1/2014(3)
Under 45	35.00%	27.00%			5	17.00%		
45	35.00%	27.00%			6	17.00%		
46	35.00%	27.00%			7	17.00%		
47	35.00%	27.00%			8	17.00%		
48	35.00%	27.00%			9	17.00%		
49	35.00%	27.00%			10	17.00%		
50	30.00%	27.00%			11	17.00%		
51	30.00%	27.00%			12	17.00%		
52	30.00%	27.00%			13	17.00%		
53	30.00%	27.00%			14	17.00%		
54	30.00%	27.00%			15	17.00%		
55	30.00%	27.00%	4.00%	5.00%	16	17.00%		
56	30.00%	27.00%	4.00%	5.00%	17	17.00%		
57	30.00%	27.00%	4.00%	5.00%	18	17.00%		
58	30.00%	27.00%	4.00%	5.00%	19	17.00%		
59	30.00%	27.00%	4.00%	5.00%	20	30.00%		
60	30.00%	27.00%	4.00%	8.00%	21	22.50%		
61	30.00%	27.00%	4.00%	9.00%	22	18.00%		
62	30.00%	40.00%	15.00%	20.00%	23	21.00%		
63	30.00%	35.00%	15.00%	18.00%	24	24.00%		
64	30.00%	30.00%	15.00%	16.00%	25	27.00%	21.60%	16.00%
65	30.00%	30.00%			26	30.00%	24.00%	16.00%
66	30.00%	27.00%			27	33.00%	26.40%	16.00%
67	30.00%	27.00%			28	36.00%	28.80%	16.00%
68	30.00%	27.00%			29	39.00%	31.20%	16.00%
69	30.00%	27.00%			30+	39.00%	31.20%	100.00%
70	30.00%	27.00%						
71	30.00%	27.00%						
72	30.00%	27.00%						
73	30.00%	27.00%						
74	30.00%	27.00%						
75	100.00%	100.00%						

(1) The annual rate of retirement is 11% for male members and 12% for female members with 25-26 years of service.

(2) The annual rate of retirement is 100% at age 62.

(3) The annual rate of retirement is 100% at age 60.

Nonhazardous System: There is a 1% increase in the first two years a member becomes eligible under the age if 65. For members hired after 7/1/2003, the rates shown above are multiplied by 80% if the member is under age 65 to reflect the different retiree health insurance benefit.

Hazardous System: For members hired after 7/1/2003 and prior to 9/1/2008, the rates shown above are multiplied by 80% if the member is under age 62 to reflect the different retiree health insurance benefit.

Table 3b: Retirement Rate Assumptions KERS (See footnotes 1 - 3)

Non-Hazardous					Hazardous				
	KERS Normal Retirement		KERS Early Retirement[1]			KERS Members participating before 9/1/2008[2]		KERS Members participating between 9/1/2008 and 1/1/2014[3]	KERS Members participating after 1/1/2014[3]
Age	Male	Female	Male	Female	Service	Age 55-61	Age 62+		
Under 45	20.00%	33.00%			5	10.00%	35.00%		
45	21.00%	33.00%			6	10.00%	35.00%		
46	22.00%	33.00%			7	10.00%	35.00%		
47	23.00%	33.00%			8	10.00%	35.00%		
48	24.00%	33.00%			9	10.00%	35.00%		
49	25.00%	33.00%			10	10.00%	35.00%		
50	26.00%	33.00%			11	10.00%	35.00%		
51	27.00%	33.00%			12	10.00%	35.00%		
52	28.00%	33.00%			13	10.00%	35.00%		
53	29.00%	33.00%			14	10.00%	35.00%		
54	30.00%	33.00%			15	10.00%	35.00%		
55	30.00%	33.00%	5.00%	5.00%	16	10.00%	35.00%		
56	30.00%	33.00%	5.00%	5.00%	17	10.00%	35.00%		
57	30.00%	33.00%	5.00%	5.00%	18	10.00%	35.00%		
58	30.00%	33.00%	5.00%	5.00%	19	10.00%	35.00%		
59	30.00%	33.00%	5.00%	5.00%	20	50.00%	50.00%		
60	30.00%	33.00%	5.00%	8.00%	21	32.00%	32.00%		
61	30.00%	33.00%	8.00%	9.00%	22	32.00%	32.00%		
62	35.00%	35.00%	15.00%	20.00%	23	32.00%	32.00%		
63	30.00%	33.00%	15.00%	18.00%	24	32.00%	32.00%		
64	30.00%	33.00%	15.00%	16.00%	25	32.00%	32.00%	25.60%	16.00%
65	30.00%	33.00%			26	32.00%	32.00%	25.60%	16.00%
66	30.00%	33.00%			27	32.00%	32.00%	25.60%	16.00%
67	30.00%	33.00%			28	32.00%	32.00%	25.60%	16.00%
68	30.00%	33.00%			29	32.00%	32.00%	25.60%	16.00%
69	30.00%	33.00%			30+	32.00%	32.00%	25.60%	100.00%
70	30.00%	33.00%							
71	30.00%	33.00%							
72	30.00%	33.00%							
73	30.00%	33.00%							
74	30.00%	33.00%							
75	100.00%	100.00%							

(1) The annual rate of retirement is 12% for male members and 14% for female members with 25-26 years of service.

(2) The annual rate of retirement is 100% at age 65.

(3) The annual rate of retirement is 100% at age 60.

Nonhazardous System: There is a 1% increase in the first two years a member becomes eligible under the age of 65. For members hired after 7/1/2003, the rates shown above are multiplied by 80% if the member is under age 65 to reflect the different retiree health insurance benefit.

Hazardous System: For members hired after 7/1/2003 and prior to 9/1/2008, the rates shown above are multiplied by 80% if the member is under age 65 to reflect the different retiree health insurance benefit.

Table 3c: Retirement Rate Assumptions SPRS (See footnotes 1 - 2)

	Hazardous		
Service	SPRS Members Participating before 9/1/2008(1)	SPRS Members participating betweem 9/1/2008 and 1/1/2014(2)	SPRS Members participating after 1/1/2014(2)
20	22.00%		
21	22.00%		
22	22.00%		
23	28.00%		
24	28.00%		
25	28.00%	17.60%	16.00%
26	28.00%	17.60%	16.00%
27	28.00%	17.60%	16.00%
28	44.00%	22.40%	16.00%
29	44.00%	22.40%	16.00%
30	44.00%	22.40%	100.00%
31	58.00%	22.40%	
32	58.00%	22.40%	
33	58.00%	35.20%	
34	58.00%	35.20%	
35	58.00%	35.20%	
36	58.00%	46.40%	
37	58.00%	46.40%	
38	58.00%	46.40%	
39	58.00%	46.40%	
40+	58.00%	46.40%	

(1) The annual rate of service retirement is100% at age 55.

(2) The annual rate of service retirement is 100% at age 60.

For members hired after 7/1/2003 and prior to 9/1/2008, the rates shown above are multiplied by 80% if the member is under age 55 to reflect the different retiree health insurance benefit.

11. Mortality Assumptions: Pre-retirement mortality: PUB-2010 General Mortality table, for the Nonhazardous Systems, and the PUB-2010 Public Safety Mortality table for the Hazardous Systems, projected with the ultimate rates from the MP-2020 mortality improvement scale using a base year of 2010.

Post-retirement mortality (non-disabled): System-specific mortality table based on mortality experience from 2013-2022, projected with the ultimate rates from MP-2020 mortality improvement scale using a base year of 2023.

Table 4a provides the life expectancy for a non-disabled retiree in future years based on the assumption with full generational projection:

Post-retirement mortality (disabled): PUB-2010 Disabled Mortality table, with rates multiplied by 150% for both male and female rates, projected with the ultimate rates from the MP-2020 mortality improvement scale using a base year of 2010.

These mortality assumptions were adopted in 2023. Table 4b provides sample annual rates of mortality in the base year of each table (2023 for the retired member mortality rates and 2010 for the active member and disabled member mortality rates).

Table 4a: Life Expectancy for an Age 65 Retiree in Years

			Year of Retirement		
Gender	2025	2030	2035	2040	2045
Male	19.8	20.2	20.6	21.0	21.3
Female	22.4	22.7	23.1	23.4	23.7

Table 4b: Sample Annual Rate of Mortality

	Active Member Mortality Nonhazardous		Active Member Mortality Hazardous		Retired Member Mortality		Disabled Member Mortality	
Age	Males	Females	Males	Females	Males	Females	Males	Females
20	0.04%	0.01%	0.04%	0.02%	0.03%	0.01%	0.62%	0.35%
22	0.03%	0.01%	0.04%	0.02%	0.03%	0.01%	0.53%	0.29%
32	0.04%	0.02%	0.04%	0.03%	0.04%	0.02%	0.59%	0.46%
42	0.08%	0.04%	0.07%	0.06%	0.07%	0.04%	1.14%	1.13%
52	0.18%	0.10%	0.14%	0.10%	0.32%	0.21%	2.73%	2.38%
62	0.37%	0.22%	0.32%	0.19%	0.94%	0.55%	4.02%	3.08%
72	0.84%	0.60%	0.98%	0.60%	2.38%	1.48%	6.52%	4.86%

12. Withdrawal Rates: The probability, or likelihood, of active members terminating employment prior to retirement is provided in Table 5. The rates below include the pre-retirement mortality rates described in item #11. These assumptions were adopted in 2023.

Table 5: Selected Rates of Termination Prior to Retirement

Years of Service	CERS Nonhazardous	CERS Hazardous	Years of Service	KERS Nonhazardous	KERS Hazardous	Years of Service	SPRS
1	20.00%	20.00%	1	22.00%	32.50%	1	15.00%
2	17.92%	10.48%	2	18.10%	25.58%	2	5.30%
3	14.35%	8.33%	3	14.73%	19.66%	3	4.14%
4	12.26%	7.06%	4	12.77%	16.19%	4	3.47%
5	10.78%	6.18%	5	11.37%	13.73%	5	2.98%
6	9.63%	5.47%	6	10.29%	11.82%	6	2.61%
7	8.69%	4.91%	7	9.41%	10.26%	7	2.30%
8	7.90%	4.43%	8	8.66%	8.93%	8	2.05%
9	7.21%	4.01%	9	8.01%	7.79%	9	1.83%
10	6.60%	3.66%	10	7.44%	6.79%	10	1.63%
11	6.06%	3.32%	11	6.93%	5.89%	11	1.45%
12	5.57%	3.02%	12	6.47%	5.07%	12	1.29%
13	5.12%	2.76%	13	6.04%	4.33%	13	1.14%
14	4.70%	2.51%	14	5.65%	3.64%	14	1.01%
15	4.32%	2.28%	15	5.29%	3.00%	15	0.88%
16	3.97%	2.07%	16	4.95%	2.42%	16	0.77%
17	3.63%	1.86%	17	4.64%	1.86%	17	0.66%
18	3.32%	1.68%	18	4.36%	1.34%	18	0.56%
19	3.04%	1.50%	19	4.07%	0.86%	19	0.46%
20	2.75%	1.33%	20	3.82%	0.39%	20	0.37%
21	2.48%	0.00%	21	3.56%	0.00%	21	0.00%
22	2.23%	0.00%	22	3.32%	0.00%	22	0.00%
23	2.00%	0.00%	23	3.10%	0.00%	23	0.00%
24	1.77%	0.00%	24	2.88%	0.00%	24	0.00%
25	1.55%	0.00%	25	2.67%	0.00%	25	0.00%
26+	0.00%	0.00%	26+	0.00%	0.00%	26+	0.00%

13. Rates of Disablement: CERS/KERS/SPRS provides disability benefits for those individuals meeting specific qualifications established by state law. This assumption provides the probability, or likelihood, that a member will become disabled during the course of employment for various age levels. These assumptions were adopted in 2023.

Table 6: Sample Rates of Disablement

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
Nearest Age	Probability	Probability	Probability	Probability	Probability
20	0.04%	0.06%	0.03%	0.05%	0.05%
30	0.06%	0.11%	0.05%	0.08%	0.09%
40	0.13%	0.24%	0.11%	0.18%	0.20%
50	0.37%	0.67%	0.31%	0.50%	0.56%
60	0.97%	1.75%	0.80%	1.32%	1.46%

14. Assumption Changes Since Prior Valuation: Demographic and Economic assumptions were updated based on the 2022 experience study. A 1% increase in the rate of retirement for each of the first two years a nonhazardous member becomes retirement eligible under the age of 65 is assumed to reflect the shift in retirement pattern due to House Bill 506. Additionally, in conjunction with the review of the healthcare per capita claims cost, the assumed increase in the future healthcare costs, or trend assumption, is reviewed on an annual basis. The trend assumption for the non-Medicare Plans was increased during the select period as a result of this review.

Summary of Actuarial Valuation Results					
Recommended Contribution Rate (FY 2025)[(1)]	**CERS Nonhazardous**	**CERS Hazardous**	**KERS Nonhazardous**	**KERS Hazardous**	**SPRS**
Pension Fund Contribution	19.71%	36.49%	6.99%	23.74%	65.79%
Insurance Fund Contribution	0.00%	2.12%	1.45%	0.00%	2.31%
Actuarially Determined Employer Contributions Rate[(2)], payable as a percentage of payroll	19.71%	38.61%	8.44%	23.74%	68.10%
Amortization Cost to be Allocated, if applicable	N/A	N/A	$856,561,041	N/A	N/A
Funded Status as of Valuation Date As of June 30, 2023 (in Whole $)					
Pension Fund					
Actuarial Liability	$15,296,428,191	$5,849,996,034	$16,304,277,475	$1,363,036,563	$1,091,794,728
Actuarial Value of Assets	8,585,072,563	3,008,146,724	3,552,471,492	891,460,165	589,848,255
Unfunded Liability on Actuarial Value of Assets	6,711,355,628	2,841,849,310	12,751,805,983	471,576,398	501,946,473
Funding Ratio on Actuarial Value of Assets	56.12%	51.42%	21.79%	65.40%	54.03%
Market Value of Assets	8,672,597,255	3,035,192,206	3,539,942,510	893,533,383	591,514,353
Unfunded Liability on Market Value of Assets	$6,623,830,936	$2,814,803,828	$12,764,334,965	$469,503,180	$500,280,375
Funding Ratio on Market Value of Assets	56.70%	51.88%	21.71%	65.55%	54.18%
Insurance Fund					
Actuarial Liability	$2,560,387,062	$1,604,146,747	$1,877,108,617	$363,512,398	$244,058,286
Actuarial Value of Assets	3,366,332,261	1,615,348,695	1,532,894,678	619,518,838	245,171,996
Unfunded Liability on Actuarial Value of Assets	(805,945,199)	(11,201,948)	344,213,939	(256,006,440)	(1,113,710)
Funding Ratio on Actuarial Value of Assets	131.48%	100.70%	81.66%	170.43%	100.46%
Market Value of Assets	3,398,374,988	1,634,191,785	1,532,752,170	625,356,052	248,109,091
Unfunded Liability on Market Value of Assets	$(837,987,926)	$(30,045,038)	$344,356,447	$(261,843,654)	$(4,050,805)
Funding Ratio on Market Value of Assets	132.73%	101.87%	81.65%	172.03%	101.66%
Member Data (See Footnotes)					
Number of Active Members	78,810	9,205	31,383	3,886	868
Total Annual Payroll (Active Members)[(3)]	$2,898,812,630	$677,987,564	$1,615,867,787	$211,601,653	$65,912,885
Average Annual Pay (Active Members)	$36,782	$73,654	$51,489	$54,452	$75,937
Number of Retired Members & Beneficiaries	70,932	11,603	48,409	4,887	1,697
Average Annual Retirement Allowance	$12,056	$27,366	$20,333	$15,320	$37,298
Number of Vested Inactive Members	50,491	1,835	31,085	2,326	324
Number of Inactive Members Due a Refund	60,595	2,452	24,895	6,251	390

[(1)] Rates do reflect the CERS phase-in provisions, which limit the increases to the employer contribution rates to 12% over the prior fiscal year through June 30, 2028. However, the actuarially determined employer contribution rates are below this threshold for FYE2025, and therefore, the rates shown above are equal to the actuarially determined rates.

[(2)] For the KERS Nonhazardous fund, contribution rate includes the normal cost portion of the contribution requirement only. Amortization cost will be allocated to employers as a dollar amount.

[(3)] Annual payroll included in the Summary of Actuarial Valuation Results is based upon the annualized monthly payroll for active members as of the valuation date. The annual payroll recorded in the financial section is based upon the sum of the monthly payroll for active members recorded for each month of fiscal year ending June 30, 2023.

CERS Funds

The Insurance Fund contribution rates and the employer contribution rates for CERS Nonhazardous and CERS Hazardous shown in the tables below are the full funding rates presented by the actuary in the 2014 through 2023 annual valuations.

House Bill 362 was enacted during the 2018 legislative session that limits the annual increase in the CERS employer contribution over the prior fiscal year to 12% per year for the period of July 1, 2018 to June 30, 2028, or until the full actuarial required contribution is met.

Recommended Employer Contribution Rates
As of June 30

CERS (Nonhazardous Employers)

Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
2014	2015-2016	4.23%	8.19%	12.42%	4.88%	17.30%
2015	2016-2017	3.80%	10.15%	13.95%	4.93%	18.88%
2016	2017-2018	3.70%	10.78%	14.48%	4.70%	19.18%
2017	2018-2019	5.85%	15.99%	21.84%	6.21%	28.05%
2018	2019-2020	5.80%	16.72%	22.52%	4.76%	27.28%
2019	2020-2021	6.63%	17.18%	23.81%	5.43%	29.24%
2020	2021-2022	6.46%	17.42%	23.88%	4.17%	28.05%
2021	2022-2023	6.30%	17.10%	23.40%	3.39%	26.79%
2022	2023-2024	6.06%	17.28%	23.34%	0.00%	23.34%
2023	2024-2025	5.29%	14.42%	19.71%	0.00%	19.71%

CERS (Hazardous Employers)

Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
2014	2015-2016	6.21%	14.05%	20.26%	13.42%	33.68%
2015	2016-2017	4.52%	17.19%	21.71%	9.79%	31.50%
2016	2017-2018	4.40%	17.80%	22.20%	9.35%	31.55%
2017	2018-2019	6.78%	28.91%	35.69%	12.17%	47.86%
2018	2019-2020	6.35%	30.63%	36.98%	9.52%	46.50%
2019	2020-2021	11.36%	30.66%	42.02%	9.86%	51.88%
2020	2021-2022	11.00%	32.23%	43.23%	8.73%	51.96%
2021	2022-2023	10.71%	32.10%	42.81%	6.78%	49.59%
2022	2023-2024	10.34%	30.77%	41.11%	2.58%	43.69%
2023	2024-2025	9.77%	26.72%	36.49%	2.12%	38.61%

The insurance fund contribution rates and the employer contribution rates for CERS Nonhazardous and CERS Hazardous shown in the above tables are the full funding rates presented by the actuary in the 2014 through 2023 annual valuations. However, in the case of CERS Nonhazardous and CERS Hazardous, in 2006 the actuary recommended a five-year phase-in of the rate which requires the payment of the insurance benefit normal cost with a five-year phase-in of the unfunded accrued liability (UAL) associated with the insurance funds. In 2008 this recommendation was changed to a ten-year phase-in from the initial starting date. This phase-in was complete and the full actuarial rates were paid in FYE 2018. HB 362 (passed during the 2018 legislative session) limited the employer contribution rate increases to 12% per year over the prior fiscal year for the period of July 1, 2018 to June 30, 2028. SB 249 (passed during the 2020 legislative session) froze the contribution rates for one year so that the rates for FYE 2021 were equal to FYE 2020. As of FYE 2023, the CERS contributions rates were fully phased-in and the actual employer contribution rates equaled the actuarially determined rates shown above.

KERS Funds

The contribution rates for KERS Nonhazardous and KERS Hazardous shown in the tables below are the full funding rates presented by the actuary for 2014 through 2023 annual valuations. However, actual employer contributions were less than the recommended rates for years 2009 through 2014. SB 2 (2013 Legislative Regular Session) required full funding starting in fiscal year 2015. HB 265 from the 2018 legislative session reduced the employer contribution rate for KERS quasi-governmental agencies to the fiscal year 2018 rate for fiscal year 2019, which was 49.47%. The 2019 Special Legislative Session HB 1 sets the employer contribution rate at 49.47%, retroactive to July 1, 2019, for fiscal year 2020 for KERS quasi-governmental agencies. House Bill 8 passed during the 2021 legislative session and changed how employer contributions are allocated and collected from the participating employers in the KERS Nonhazardous Fund. Each employer will pay a normal cost contribution on the payroll of their covered employees and contribute to the fund an allocated share of the cost required to amortize the unfunded liability.

Recommended Employer Contribution Rates
As of June 30

KERS (Nonhazardous Employers)

Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
2014	2015-2016	4.10%	29.47%	33.57%	7.74%	41.31%
2015	2016-2017	3.60%	35.33%	38.93%	8.35%	47.28%
2016	2017-2018	4.93%	37.05%	41.98%	8.41%	50.39%
2017	2018-2019	8.17%	62.86%	71.03%	12.40%	83.43%
2018	2019-2020	7.98%	66.56%	74.54%	10.65%	85.19%
2019	2020-2021	7.99%	65.29%	73.28%	11.15%	84.43%
Valuation Date	**Applicable Fiscal Year**	**Pension Fund Normal Cost**	**Insurance Fund: Normal Cost**	**Normal Cost Contribution**	**Amortization Cost to be Allocated**	
2020	2021-2022	7.90%	2.20%	10.10%	$1,039,849,248	
2021	2022-2023	7.82%	2.15%	9.97%	$994,421,476	
2022	2023-2024	7.74%	1.86%	9.60%	$905,892,818	
2023	2024-2025	6.99%	1.45%	8.44%	$856,561,041	

KERS (Hazardous Employers)

Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
2014	2015-2016	5.69%	11.40%	17.09%	7.12%	24.21%
2015	2016-2017	6.93%	14.15%	21.08%	2.74%	23.82%
2016	2017-2018	6.44%	14.04%	20.48%	1.34%	21.82%
2017	2018-2019	9.67%	24.72%	34.39%	2.46%	36.85%
2018	2019-2020	9.24%	25.18%	34.42%	0.00%	34.42%
2019	2020-2021	9.21%	26.79%	36.00%	0.00%	36.00%
2020	2021-2022	8.84%	24.59%	33.43%	0.00%	33.43%
2021	2022-2023	8.78%	23.04%	31.82%	0.00%	31.82%
2022	2023-2024	8.60%	21.52%	30.12%	0.00%	30.12%
2023	2024-2025	7.71%	16.03%	23.74%	0.00%	23.74%

The contribution rates for KERS Nonhazardous and KERS Hazardous shown in the above tables are the full funding rates presented by the actuary in the 2014 through 2023 annual valuations. HB 265 (passed during the 2018 legislative session), HB 1 (passed during the 2019 special legislative session), and HB 352 (passed during the 2020 legislative session) reduced the FYE 2019-2021 employer contribution rate to 49.47% for Regional Mental Health/Mental Retardation Boards, Local and District Health Departments, State Universities, Community Colleges and any other agencies eligible to voluntarily cease participating in the KERS Nonhazardous fund. HB 8 (passed during the 2021 legislative session) changed how employer contributions are allocated and collected amongst employers in the KERS Nonhazardous fund effective for FYE2022. The normal cost is collected as a percentage of covered payroll and the amortization cost is allocated to employers as a dollar amount based on their accrued liability as of June 30, 2019. Amortization cost shown above reflects the amortization required as of the valuation date and does not reflect any adjustment for the cessation of any employers after the valuation date.

SPRS Funds

The contribution rates for SPRS shown in the below tables are the full funding rates presented by the actuary in the 2014 through 2023 annual valuations. However, the actual employer contribution rates have been less than those shown below. As a result of HB1 passed in 2008 the statute called for an employer contribution rate at an increasing percentage of the full funding rates. SB2 (2013 Regular Legislative Session) eliminated this phase-in beginning with the June 30, 2013, actuarial valuation.

Recommended Employer Contribution Rates
As of June 30
SPRS Employers

Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
2014	2015-2016	8.39%	50.05%	58.44%	19.17%	77.61%
2015	2016-2017	8.77%	57.70%	66.47%	18.87%	85.34%
2016	2017-2018	11.16%	60.41%	71.57%	18.10%	89.67%
2017	2018-2019	16.21%	102.84%	119.05%	27.23%	146.28%
2018	2019-2020	15.81%	104.73%	120.54%	19.50%	140.04%
2019	2020-2021	19.39%	104.40%	123.79%	19.69%	143.48%
2020	2021-2022	19.04%	108.95%	127.99%	18.07%	146.06%
2021	2022-2023	18.60%	66.72%	85.32%	14.11%	99.43%
2022	2023-2024	19.49%	65.90%	85.39%	3.68%	89.07%
2023	2024-2025	19.41%	46.38%	65.79%	2.31%	68.10%

The contribution rates for SPRS shown in the above tables are the full funding rates presented by the actuary in the 2014 through 2023 annual valuations.

Summary of Actuarial Unfunded Liabilities
As of June 30 ($ in Thousands)

CERS (Nonhazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	$9,772,523	$6,117,134	$6,507,300	$3,655,389	$3,265,222	62.60%	66.59%
2015	10,740,325	6,474,849	6,416,854	4,265,477	4,323,472	60.29%	59.75%
2016	11,076,457	6,535,372	6,106,187	4,541,084	4,970,270	59.00%	55.13%
2017	12,803,509	6,764,873	6,687,237	6,038,636	6,116,272	52.84%	52.23%
2018	13,191,505	6,950,225	7,018,963	6,241,280	6,172,542	52.69%	53.21%
2019	14,356,114	7,049,527	7,159,921	7,306,587	7,196,192	49.10%	49.87%
2020	14,610,867	7,220,607	7,027,327	7,390,260	7,583,540	49.42%	48.10%
2021	14,894,907	7,715,884	8,565,652	7,179,023	6,329,254	51.80%	57.51%
2022	15,674,220	8,148,912	7,963,586	7,525,308	7,710,634	51.99%	50.81%
2023	$15,296,428	$8,585,072	$8,672,597	$6,711,356	$6,623,831	56.12%	56.70%

CERS (Nonhazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	$2,616,915	$1,831,199	$1,899,557	$785,715	$717,357	69.98%	72.59%
2015	2,907,827	1,997,456	1,948,454	910,371	959,373	68.69%	67.01%
2016	2,988,121	2,079,811	1,943,757	908,310	1,044,364	69.60%	65.05%
2017	3,355,151	2,227,401	2,212,536	1,127,750	1,142,616	66.39%	65.94%
2018	3,092,623	2,371,430	2,414,126	721,193	678,497	76.68%	78.06%
2019	3,567,947	2,523,249	2,569,511	1,044,698	998,435	70.72%	72.02%
2020	3,392,086	2,661,351	2,581,613	730,735	810,473	78.46%	76.11%
2021	3,450,485	2,947,312	3,246,801	503,172	203,683	85.42%	94.10%
2022	2,391,990	3,160,084	3,079,984	(768,094)	(687,994)	132.11%	128.76%
2023	$2,560,387	$3,366,332	$3,398,375	$(805,945)	$(837,988)	131.48%	132.73%

CERS (Hazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	$3,288,826	$1,967,640	$2,082,998	$1,321,186	$1,205,827	59.83%	63.34%
2015	3,613,308	2,096,783	2,073,397	1,516,525	1,539,911	58.03%	57.38%
2016	3,704,456	2,139,119	2,003,669	1,565,337	1,700,787	57.74%	54.09%
2017	4,649,047	2,238,320	2,217,996	2,410,726	2,431,051	48.15%	47.71%
2018	4,792,548	2,321,721	2,348,337	2,470,827	2,444,211	48.44%	49.00%
2019	5,245,365	2,375,106	2,413,708	2,870,258	2,831,657	45.28%	46.02%
2020	5,431,298	2,447,885	2,379,704	2,983,413	3,051,595	45.07%	43.81%
2021	5,629,458	2,628,621	2,914,408	3,000,837	2,715,050	46.69%	51.77%
2022	5,861,691	2,788,714	2,718,234	3,072,977	3,143,457	47.58%	46.37%
2023	$5,849,996	$3,008,147	$3,035,192	$2,841,849	$2,814,804	51.42%	51.88%

CERS (Hazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	$1,493,864	$997,733	$1,034,308	$496,131	$459,557	66.79%	69.24%
2015	1,504,015	1,087,707	1,061,561	416,308	442,454	72.32%	70.58%
2016	1,558,818	1,135,784	1,062,602	423,034	496,216	72.86%	68.17%
2017	1,788,433	1,196,780	1,189,001	591,653	599,431	66.92%	66.48%
2018	1,684,028	1,256,306	1,280,982	427,722	403,046	74.60%	76.07%
2019	1,732,879	1,313,659	1,340,714	419,221	392,165	75.81%	77.37%
2020	1,740,971	1,362,028	1,321,117	378,943	419,854	78.23%	75.88%
2021	1,751,203	1,475,635	1,627,824	275,568	123,379	84.26%	92.95%
2022	1,538,131	1,553,761	1,522,671	(15,630)	15,460	101.02%	98.99%
2023	$1,604,147	$1,615,349	$1,634,192	$(11,202)	$(30,045)	100.70%	101.87%

Summary of Actuarial Unfunded Liabilities
As of June 30 ($ in Thousands)

KERS (Nonhazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	$11,550,110	$2,423,957	$2,560,420	$9,126,154	$8,989,691	20.99%	22.17%
2015	12,359,673	2,350,990	2,307,858	10,008,683	10,051,815	19.02%	18.67%
2016	13,224,698	2,112,287	1,953,422	11,112,412	11,271,276	15.97%	14.77%
2017	15,591,641	2,123,623	2,056,870	13,468,018	13,534,771	13.62%	13.19%
2018	15,675,232	2,019,278	2,004,446	13,655,954	13,670,786	12.88%	12.79%
2019	16,466,427	2,206,280	2,233,672	14,260,147	14,232,755	13.40%	13.57%
2020	16,348,962	2,323,298	2,308,080	14,025,663	14,040,882	14.21%	14.12%
2021	16,321,373	2,735,876	3,018,660	13,585,497	13,302,713	16.76%	18.50%
2022	16,576,631	3,065,263	3,013,845	13,511,368	13,562,786	18.49%	18.18%
2023	$16,304,277	$3,552,471	$3,539,942	$12,751,806	$12,764,335	21.79%	21.71%

KERS (Nonhazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	$2,226,760	$621,237	$664,776	$1,605,523	$1,561,984	27.90%	29.85%
2015	2,413,705	695,018	687,684	1,718,687	1,726,021	28.79%	28.49%
2016	2,456,678	743,270	695,189	1,713,408	1,761,489	30.26%	28.30%
2017	2,683,496	823,918	817,370	1,859,578	1,866,126	30.70%	30.46%
2018	2,435,506	887,121	891,205	1,548,385	1,544,301	36.42%	36.59%
2019	2,733,065	991,427	995,089	1,741,639	1,737,977	36.28%	36.41%
2020	2,564,788	1,095,959	1,060,649	1,468,829	1,504,139	42.73%	41.35%
2021	2,574,112	1,291,472	1,419,477	1,282,640	1,154,634	50.17%	55.14%
2022	1,782,386	1,409,553	1,364,419	372,833	417,967	79.08%	76.55%
2023	$1,877,109	$1,532,895	$1,532,752	$344,214	$344,357	81.66%	81.65%

KERS (Hazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	$816,850	$527,897	$559,504	$288,953	$257,346	64.63%	68.50%
2015	895,433	556,688	550,120	338,746	345,313	62.17%	61.44%
2016	936,706	559,487	524,679	377,219	412,027	59.73%	56.01%
2017	1,121,420	607,159	601,529	514,261	519,891	54.14%	53.64%
2018	1,151,923	639,262	645,485	512,661	506,438	55.50%	56.04%
2019	1,226,195	671,647	680,932	554,548	545,262	54.77%	55.53%
2020	1,283,770	709,587	690,350	574,183	593,420	55.27%	53.78%
2021	1,295,243	782,496	866,141	512,747	429,102	60.41%	66.87%
2022	1,316,825	832,436	810,978	484,389	505,847	63.22%	61.59%
2023	$1,363,037	$891,460	$893,534	$471,577	$469,503	65.40%	65.55%

KERS (Hazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	$396,987	$419,396	$435,504	(22,409)	(38,517)	105.64%	109.70%
2015	374,904	451,514	441,626	(76,610)	(66,722)	120.43%	117.80%
2016	377,745	473,160	440,596	(95,415)	(62,851)	125.26%	116.64%
2017	419,440	493,458	488,838	(74,019)	(69,399)	117.65%	116.55%
2018	393,481	511,441	519,072	(117,961)	(125,592)	129.98%	131.92%
2019	426,705	525,315	534,053	(98,610)	(107,348)	123.11%	125.16%
2020	427,977	539,251	521,755	(111,275)	(93,778)	126.00%	121.91%
2021	424,456	575,025	633,677	(150,569)	(209,221)	135.47%	149.29%
2022	347,044	597,701	588,162	(250,657)	(241,118)	172.23%	169.48%
2023	$363,512	$619,519	$625,356	$(256,007)	$(261,844)	170.43%	172.03%

Summary of Actuarial Unfunded Liabilities
As of June 30 ($ in Thousands)

SPRS (Pension)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	$681,118	$242,742	$260,763	$438,377	$420,355	35.64%	38.28%
2015	734,156	248,388	246,968	485,769	487,188	33.83%	33.64%
2016	775,160	234,568	217,594	540,593	557,566	30.26%	28.07%
2017	967,145	261,320	255,737	705,824	711,408	27.02%	26.44%
2018	989,528	268,259	267,572	721,269	721,956	27.11%	27.04%
2019	1,045,318	282,162	286,165	763,156	759,153	26.99%	27.38%
2020	1,053,157	296,126	293,949	757,031	759,208	28.12%	27.91%
2021	1,053,260	323,250	356,346	730,009	696,914	30.69%	33.83%
2022	1,067,447	559,973	551,699	507,474	515,748	52.46%	51.68%
2023	$1,091,795	$589,848	$591,514	$501,947	$500,281	54.03%	54.18%

SPRS (Insurance)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	$234,271	$155,595	$165,168	$78,676	$69,103	66.42%	70.50%
2015	254,839	167,775	165,018	87,064	89,821	65.84%	64.75%
2016	257,197	172,704	161,366	84,494	95,831	67.15%	62.74%
2017	276,641	180,464	178,838	96,178	97,803	65.23%	64.65%
2018	262,088	187,535	190,847	74,553	71,242	71.55%	72.82%
2019	276,809	197,395	201,206	79,415	75,604	71.31%	72.69%
2020	276,143	207,018	201,340	69,126	74,803	74.97%	72.91%
2021	272,406	223,251	247,318	49,154	25,088	81.96%	90.79%
2022	232,798	234,239	231,242	(1,441)	1,556	100.62%	99.33%
2023	$244,058	$245,172	$248,109	$(1,114)	$(4,051)	100.46%	101.66%

Solvency Test
As of June 30 ($ in Thousands)

CERS (Nonhazardous Pension Fund)

	Actuarial Liabilities						
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	$1,204,383	$5,873,279	$2,694,860	$6,117,134	100.00%	83.60%	0.00%
2015	1,216,585	6,489,863	3,033,878	6,474,849	100.00%	81.00%	0.00%
2016	1,231,027	6,785,530	3,059,900	6,535,372	100.00%	78.20%	0.00%
2017	1,277,432	7,731,682	3,794,396	6,764,873	100.00%	71.00%	0.00%
2018	1,269,287	8,196,719	3,725,500	6,950,225	100.00%	69.30%	0.00%
2019	1,280,679	8,905,545	4,169,890	7,049,527	100.00%	64.80%	0.00%
2020	1,312,554	9,088,237	4,210,077	7,220,607	100.00%	65.00%	0.00%
2021	1,324,826	9,397,968	4,172,112	7,715,883	100.00%	68.00%	0.00%
2022	1,335,758	10,021,345	4,317,117	8,148,912	100.00%	68.00%	0.00%
2023	$1,341,594	$9,791,605	$4,163,230	$8,585,073	100.00%	74.00%	0.00%

CERS (Nonhazardous Insurance Fund)

	Actuarial Liabilities						
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	$-	$1,318,183	$1,298,732	$1,831,199	100.00%	100.00%	39.50%
2015	-	1,372,597	1,535,231	1,997,456	100.00%	100.00%	40.70%
2016	-	1,484,937	1,503,184	2,079,811	100.00%	100.00%	39.60%
2017	-	1,603,438	1,751,713	2,227,401	100.00%	100.00%	35.60%
2018	-	1,525,322	1,567,301	2,371,430	100.00%	100.00%	54.00%
2019	-	1,830,692	1,737,255	2,523,249	100.00%	100.00%	39.90%
2020	-	1,746,160	1,645,926	2,661,351	100.00%	100.00%	55.60%
2021	-	1,835,734	1,614,751	2,947,312	100.00%	100.00%	68.80%
2022	-	1,055,375	1,336,615	3,160,084	100.00%	100.00%	100.00%
2023	$-	$1,256,529	$1,303,858	$3,366,332	100.00%	100.00%	100.00%

CERS (Hazardous Pension Fund)

	Actuarial Liabilities						
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	$415,070	$2,077,517	$796,239	$1,967,640	100.00%	74.70%	0.00%
2015	422,359	2,297,703	893,246	2,096,783	100.00%	72.90%	0.00%
2016	428,713	2,388,712	887,031	2,139,119	100.00%	71.60%	0.00%
2017	458,808	2,910,601	1,279,638	2,238,320	100.00%	61.10%	0.00%
2018	442,637	3,151,057	1,198,853	2,321,721	100.00%	59.60%	0.00%
2019	458,559	3,399,954	1,386,852	2,375,106	100.00%	56.40%	0.00%
2020	454,801	3,606,091	1,370,407	2,447,885	100.00%	55.30%	0.00%
2021	457,391	3,777,313	1,394,754	2,628,621	100.00%	57.50%	0.00%
2022	468,325	3,915,964	1,477,402	2,788,714	100.00%	59.30%	0.00%
2023	$476,005	$3,905,983	$1,468,008	$3,008,147	100.00%	64.80%	0.00%

CERS (Hazardous Insurance Fund)

	Actuarial Liabilities						
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	$-	$700,312	$793,553	$997,733	100.00%	100.00%	37.50%
2015	-	790,714	713,301	1,087,707	100.00%	100.00%	41.60%
2016	-	879,360	679,458	1,135,784	100.00%	100.00%	37.70%
2017	-	994,764	793,669	1,196,780	100.00%	100.00%	25.50%
2018	-	1,001,717	682,311	1,256,306	100.00%	100.00%	37.30%
2019	-	1,072,861	660,018	1,313,659	100.00%	100.00%	36.50%
2020	-	1,154,389	586,582	1,362,028	100.00%	100.00%	35.40%
2021	-	1,217,527	533,676	1,475,635	100.00%	100.00%	48.40%
2022	-	1,045,022	493,109	1,553,761	100.00%	100.00%	100.00%
2023	$-	$1,163,315	$440,832	$1,615,349	100.00%	100.00%	100.00%

Solvency Test
As of June 30 ($ in Thousands)

KERS (Nonhazardous Pension Fund)

	Actuarial Liabilities						
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	$928,558	$8,870,693	$1,750,860	$2,423,957	100.00%	16.90%	0.00%
2015	925,934	9,437,468	1,996,271	2,350,990	100.00%	15.10%	0.00%
2016	920,120	10,010,168	2,294,410	2,112,286	100.00%	11.90%	0.00%
2017	934,559	11,608,346	3,048,736	2,123,623	100.00%	10.20%	0.00%
2018	892,033	11,929,018	2,854,180	2,019,278	100.00%	9.40%	0.00%
2019	881,020	12,513,230	3,072,176	2,206,280	100.00%	10.60%	0.00%
2020	869,196	12,467,523	3,012,243	2,323,298	100.00%	11.70%	0.00%
2021	877,142	12,425,951	3,018,279	2,735,876	100.00%	15.00%	0.00%
2022	859,591	12,700,595	3,016,445	3,065,263	100.00%	17.40%	0.00%
2023	$889,146	$12,013,685	$3,401,447	$3,552,471	100.00%	22.20%	0.00%

KERS (Nonhazardous Insurance Fund)

	Actuarial Liabilities						
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	$-	$1,425,605	$801,155	$621,237	100.00%	43.60%	0.00%
2015	-	1,428,350	985,355	695,018	100.00%	48.70%	0.00%
2016	-	1,483,636	973,042	743,270	100.00%	50.10%	0.00%
2017	-	1,575,294	1,108,202	823,918	100.00%	52.30%	0.00%
2018	-	1,475,954	959,552	887,121	100.00%	60.10%	0.00%
2019	-	1,686,605	1,046,461	991,427	100.00%	58.80%	0.00%
2020	-	1,589,742	975,045	1,095,959	100.00%	68.90%	0.00%
2021	-	1,609,775	964,337	1,291,472	100.00%	80.20%	0.00%
2022	-	967,051	815,335	1,409,553	100.00%	100.00%	54.30%
2023	$-	$1,040,344	$836,765	$1,532,895	100.00%	100.00%	58.90%

KERS (Hazardous Pension Fund)

	Actuarial Liabilities						
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	$83,664	$581,231	$151,955	$527,897	100.00%	76.40%	0.00%
2015	83,606	633,189	178,638	556,688	100.00%	74.70%	0.00%
2016	86,705	648,482	201,519	559,487	100.00%	72.90%	0.00%
2017	93,350	746,350	281,720	607,159	100.00%	68.80%	0.00%
2018	89,106	810,311	252,506	639,262	100.00%	67.90%	0.00%
2019	86,663	879,818	259,713	671,647	100.00%	66.50%	0.00%
2020	95,528	898,128	290,114	709,587	100.00%	68.40%	0.00%
2021	97,559	916,431	281,254	782,496	100.00%	74.70%	0.00%
2022	94,538	946,328	275,959	832,436	100.00%	78.00%	0.00%
2023	$103,310	$929,321	$330,406	$891,460	100.00%	84.80%	0.00%

KERS (Hazardous Insurance Fund)

	Actuarial Liabilities						
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	$-	$206,477	$190,509	$419,396	100.00%	100.00%	100.00%
2015	-	221,115	153,789	451,514	100.00%	100.00%	100.00%
2016	-	228,361	149,384	473,160	100.00%	100.00%	100.00%
2017	-	243,816	175,623	493,458	100.00%	100.00%	100.00%
2018	-	248,775	144,706	511,441	100.00%	100.00%	100.00%
2019	-	282,070	144,635	525,315	100.00%	100.00%	100.00%
2020	-	281,924	146,053	539,251	100.00%	100.00%	100.00%
2021	-	288,015	136,441	575,025	100.00%	100.00%	100.00%
2022	-	232,585	114,459	597,701	100.00%	100.00%	100.00%
2023	$-	$250,189	$113,323	$619,519	100.00%	100.00%	100.00%

Solvency Test
As of June 30 ($ in Thousands)

SPRS (Pension Fund)

	Actuarial Liabilities						
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	$41,831	$563,011	$76,276	$242,742	100.00%	35.70%	0.00%
2015	41,567	605,855	86,734	248,388	100.00%	34.10%	0.00%
2016	41,871	636,499	96,791	234,568	100.00%	30.30%	0.00%
2017	44,798	773,982	148,365	261,320	100.00%	28.00%	0.00%
2018	43,835	800,788	144,905	268,259	100.00%	28.00%	0.00%
2019	41,948	848,396	154,974	282,162	100.00%	28.30%	0.00%
2020	40,831	863,579	148,747	296,126	100.00%	29.60%	0.00%
2021	42,035	860,801	150,423	323,250	100.00%	32.70%	0.00%
2022	42,027	870,200	155,220	559,973	100.00%	59.50%	0.00%
2023	$47,394	$825,683	$218,717	$589,848	100.00%	65.70%	0.00%

SPRS (Insurance Fund)

	Actuarial Liabilities						
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	$-	$143,402	$90,869	$155,595	100.00%	100.00%	13.40%
2015	-	170,447	84,392	167,775	100.00%	98.40%	0.00%
2016	-	177,094	80,103	172,704	100.00%	97.50%	0.00%
2017	-	186,390	90,251	180,464	100.00%	96.80%	0.00%
2018	-	183,151	78,937	187,535	100.00%	100.00%	5.60%
2019	-	199,959	76,850	197,395	100.00%	98.70%	0.00%
2020	-	207,638	68,506	207,018	100.00%	99.70%	0.00%
2021	-	206,707	65,699	223,251	100.00%	100.00%	25.20%
2022	-	172,664	60,134	234,239	100.00%	100.00%	100.00%
2023	$-	$176,587	$67,471	$245,172	100.00%	100.00%	100.00%

Active Member Valuation

Summary of Active Member Valuation Data
As of June 30 ($ in Thousands)

CERS Nonhazardous Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll (1)	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
2014	1,101	81,115	$2,272,270	$28	2.50%	48.1	9.6
2015	1,092	80,852	2,296,716	28	1.40%	48.0	9.5
2016	1,095	80,664	2,352,762	29	2.70%	47.9	9.4
2017	1,096	82,198	2,452,407	30	2.29%	47.9	9.4
2018	1,092	81,818	2,466,801	30	1.06%	47.7	9.2
2019	1,094	81,506	2,521,860	31	2.62%	47.7	9.1
2020	1,087	81,250	2,565,391	32	2.05%	47.8	9.1
2021	1,084	77,367	2,528,735	33	3.52%	48.0	9.4
2022	1,084	77,849	2,691,171	35	5.76%	47.6	9.1
2023	1,086	78,810	$2,898,813	$37	6.40%	47.3	8.8

CERS Hazardous Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll (1)	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
2014	254	9,194	479,164	52	3.00%	39.2	10.6
2015	246	9,172	483,641	53	1.20%	39.1	10.6
2016	246	9,084	492,851	54	2.90%	39.1	10.6
2017	250	9,495	541,633	57	5.14%	39.2	10.5
2018	247	9,263	533,618	58	0.99%	38.5	10.2
2019	243	9,474	559,353	59	2.49%	38.6	10.1
2020	243	9,419	568,558	60	2.24%	38.4	10.0
2021	241	9,173	578,355	63	4.45%	38.4	10.0
2022	240	9,184	620,934	68	7.23%	38.3	10.0
2023	239	9,205	677,988	74	8.94%	38.1	9.8

(1) Annual payroll included in the Schedule of Active Member Valuation Data is based upon the annualized monthly payroll for active members as of the valuation date. The annual payroll recorded in the financial section is based upon the sum of the monthly payroll for active members recorded for each month of fiscal year ending June 30, 2023.

Member data in actuarial section will differ from reported data in other ACFR sections. For this section, the data is reported by account instead of by person (ex: a member could have vested service in KERS, but is currently active in CERS and is reported in two membership categories).

KERS Nonhazardous Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll [1]	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
2014	353	40,365	$1,577,496	$39	0.40%	44.8	10.5
2015	348	39,056	1,544,234	40	1.20%	45.0	10.6
2016	349	37,779	1,529,249	40	2.40%	45.1	10.7
2017	342	37,234	1,531,535	41	1.62%	45.4	10.9
2018	338	35,139	1,471,477	42	1.81%	45.2	10.8
2019	331	33,696	1,437,647	43	1.88%	45.4	11.0
2020	313	31,703	1,387,761	44	2.60%	45.7	11.2
2021	321	30,186	1,349,330	45	2.12%	46.0	11.6
2022	319	29,551	1,355,267	46	2.60%	46.0	11.4
2023	320	31,383	$1,615,868	$51	12.27%	45.7	10.9

KERS Hazardous Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll [1]	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
2014	18	4,024	$129,076	$32	0.30%	40.6	7.4
2015	17	3,886	128,680	33	3.20%	40.7	7.5
2016	17	3,959	147,563	37	12.60%	40.4	7.5
2017	18	4,047	162,418	40	7.67%	40.3	7.6
2018	18	3,929	158,213	40	0.34%	39.8	7.3
2019	18	3,705	150,446	41	0.84%	39.8	7.3
2020	19	4,094	170,826	42	2.76%	39.8	7.3
2021	19	3,827	162,836	43	1.97%	40.1	7.7
2022	19	3,617	165,637	46	7.63%	40.0	7.6
2023	19	3,886	$211,602	$54	18.91%	39.7	7.2

SPRS Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll [1]	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
2014	1	855	$44,616	$52	4.00%	37.8	10.9
2015	1	937	45,765	49	(6.40)%	36.8	9.8
2016	1	908	45,551	50	2.71%	37.0	10.0
2017	1	903	48,598	54	7.28%	37.5	10.6
2018	1	886	48,808	55	2.36%	37.3	10.5
2019	1	883	47,752	54	(1.83)%	36.7	10.0
2020	1	798	46,145	58	6.93%	37.5	10.7
2021	1	775	45,338	59	1.17%	37.7	11.1
2022	1	844	47,885	57	(3.02)%	36.5	10.1
2023	1	868	$65,913	$76	33.84%	36.9	10.5

[1] Annual payroll included in the Schedule of Active Member Valuation Data is based upon the annualized monthly payroll for active members as of the valuation date. The annual payroll recorded in the financial section is based upon the sum of the monthly payroll for active members recorded for each month of fiscal year ending June 30, 2023.

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Summary of Retired Member Valuation Data
As of June 30 ($ in Thousands)

CERS (Nonhazardous)

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances [1]	% Increase In Allowances	Average Annual Allowance
2014	3,480	1,221	49,935	$33,975	$8,996	$582,958	4.48%	$12
2015	4,020	1,304	52,651	44,962	10,369	617,551	5.93%	12
2016	4,409	721	56,339	49,487	5,822	661,217	7.07%	12
2017	4,141	1,467	59,013	47,074	40,823	667,468	0.95%	11
2018	4,650	1,725	61,938	57,343	14,436	710,374	6.43%	11
2019	4,472	1,871	64,539	53,392	16,649	747,117	5.17%	12
2020	3,550	2,675	65,414	40,409	24,066	763,459	2.19%	12
2021	4,350	2,558	67,206	51,859	23,756	791,562	3.68%	12
2022	4,693	3,010	68,889	58,456	29,341	820,678	3.68%	12
2023	4,753	2,710	70,932	$62,416	$27,922	$855,173	4.20%	$12

CERS (Hazardous)

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances [1]	% Increase In Allowances	Average Annual Allowance
2014	469	116	7,646	$9,940	$1,567	$191,008	4.58%	$25
2015	526	138	8,034	13,430	2,284	202,153	5.84%	25
2016	604	75	8,563	14,642	1,494	215,302	6.50%	25
2017	576	141	8,998	15,102	3,724	226,680	5.28%	25
2018	779	190	9,587	22,292	3,297	245,675	8.38%	26
2019	608	172	10,023	16,096	2,957	258,813	5.35%	26
2020	621	192	10,452	19,621	3,643	274,791	6.17%	26
2021	651	245	10,858	18,939	4,855	288,876	5.13%	27
2022	674	301	11,231	19,629	6,539	301,966	4.53%	27
2023	672	300	11,603	$21,528	$5,964	$317,529	5.15%	$27

[1] The Annualized Retirement Allowance is the annualized value of the monthly retirement allowance for retired members and beneficiaries as of the valuation date. Consequently, the values will not match the fiscal year total benefit payments recorded in the financial section. Headcounts and hazardous benefits for members receiving benefits in both the nonhazardous and hazardous fund have been included in the hazardous funds' summaries above. Additional $25,156,000 in KERS Nonhazardous annual benefits and $29,929,000 in CERS Nonhazardous benefits not included in June 30, 2023 summary above.

Member data in actuarial section will differ from reported data in other Annual Report sections. For this section, the data is reported by account instead of by person (ex: a member could have vested service in KERS, but is currently active in CERS and is reported in two membership categories).

KERS (Nonhazardous)

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances [1]	% Increase In Allowances	Average Annual Allowance
2014	2,067	1,038	41,223	$31,433	$15,143	$866,047	(0.70)%	$21
2015	2,140	1,094	42,269	32,433	14,902	833,578	2.02%	21
2016	2,441	706	44,004	61,294	9,942	934,930	5.81%	21
2017	2,181	1,269	44,916	35,150	48,778	921,302	(1.46)%	21
2018	2,853	1,243	46,526	50,360	18,711	952,951	3.44%	20
2019	2,226	1,342	47,410	36,115	20,359	968,706	1.65%	20
2020	1,806	1,883	47,333	29,576	30,319	967,963	(0.08)%	20
2021	2,026	1,659	47,700	32,264	27,794	972,434	0.46%	20
2022	2,471	1,976	48,195	42,661	33,726	981,369	0.92%	20
2023	2,115	1,901	48,409	$35,508	$32,596	$984,280	0.30%	$20

KERS (Hazardous)

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances [1]	% Increase In Allowances	Average Annual Allowance
2014	256	66	3,620	$3,762	$612	$54,272	6.16%	$15
2015	203	65	3,758	3,144	985	56,431	3.98%	15
2016	237	29	3,966	3,028	458	59,001	4.55%	15
2017	206	79	4,093	2,771	2,609	59,162	0.27%	14
2018	321	44	4,370	5,394	507	64,050	8.26%	15
2019	227	60	4,537	4,242	769	67,523	5.42%	15
2020	214	123	4,628	3,102	1,543	69,081	2.31%	15
2021	263	165	4,726	3,681	1,959	70,803	2.49%	15
2022	300	176	4,850	4,978	2,093	73,689	4.08%	15
2023	210	173	4,887	$3,101	$1,924	$74,867	1.60%	$15

SPRS State Police Retirement System

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances [1]	% Increase In Allowances	Average Annual Allowance
2014	95	28	1,413	$3,360	$833	$53,432	4.96%	$38
2015	62	15	1,460	1,947	449	54,930	2.80%	38
2016	65	10	1,515	2,004	285	56,650	3.13%	37
2017	30	9	1,536	1,046	443	57,253	1.06%	37
2018	81	17	1,600	2,837	464	59,626	4.14%	37
2019	74	27	1,647	2,735	957	61,404	2.98%	37
2020	61	39	1,669	2,411	1,382	62,432	1.68%	37
2021	55	51	1,673	1,967	1,699	62,700	0.43%	37
2022	76	47	1,702	2,948	1,868	63,780	1.72%	37
2023	43	48	1,697	$1,308	$1,793	$63,294	(0.76)%	$37

[1] The Annualized Retirement Allowance is the annualized value of the monthly retirement allowance for retired members and beneficiaries as of the valuation date. Consequently, the values will not match the fiscal year total benefit payments recorded in the financial section. Headcounts and hazardous benefits for members receiving benefits in both the nonhazardous and hazardous fund have been included in the hazardous funds' summaries above. Additional $25,156,000 in KERS Nonhazardous annual benefits and $29,929,000 in CERS Nonhazardous benefits not included in June 30, 2023 summary above.

Member data in actuarial section will differ from reported data in other Annual Report sections. For this section, the data is reported by account instead of by person (ex: a member could have vested service in KERS, but is currently active in CERS and is reported in two membership categories).

Summary of Benefit Provisions CERS, KERS, and SPRS Plans

Plan Funding

State statute requires active members to contribute 5% of creditable compensation for nonhazardous members and 8% of creditable compensation for hazardous members. For members participating on or after September 1, 2008, an additional 1% of creditable compensation is required. This amount is credited to the Insurance Fund and is non-refundable to the member. Employers contribute at the rate determined by the Boards to be necessary for the actuarial soundness of the systems, as required by KRS 78.635 and KRS 61.565. KERS rates are subject to state budget approval.

Membership Eligibility

For all regular full-time non-school board employees to be eligible for membership, they must average 100 or more hours of work per month over a fiscal or calendar year. For all regular full-time school board employees to be eligible for membership, they must average 80 hours of work per month over the actual days worked during the school year.

Retirement Eligibility for Nonhazardous Employees		
Age	Years of Service	Allowance Reduction
Tier 1 Members Whose Participation Began Before 9/1/2008		
65	1 month	None
Any	27	None
55	5	6.5% per year for first five years, and 4.5% for next five years before age 65 or 27 years of service.
Any	25	6.5% per year for first five years, and 4.5% for next five years before age 65 or 27 years of service.
Tier 2 Members Whose Participation Began On or After 9/1/2008 but before 1/1/2014		
65	5	None
57	Rule of 87	None
60	10	6.5% per year for first five years, and 4.5% for next five years before age 65 or Rule of 87 (age plus years of service)
Tier 3 Members Whose Participation Began On or After 1/1/2014		
65	5	None
57	Rule of 87	None

Retirement Eligibility for Hazardous		
Age	**Years of Service**	**Allowance Reduction**
Tier 1 Members Whose Participation Began Before 9/1/2008		
55	1 month	None
Any	20	None
50	15	6.5% per year for first five years, and 4.5% for next five years before age 55 or 20 years of service.
Tier 2 Members Whose Participation Began On or After 9/1/2008 but before 1/1/2014		
60	5	None
Any	25	None
50	15	6.5% per year for first five years, and 4.5% for next five years before age 60 or 25 years of service.
Tier 3 Members Whose Participation Began On or After 1/1/2014		
60	5	None
Any	25	None

Benefit Formula for Nonhazardous
Tier 1: Members whose participation began before 9/1/2008

Final Compensation	Benefit Factor		Years of Service
Average of the five highest years of compensation	CERS 2.20% if:	Member begins participating prior to 8/1/2004.	Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program).
	CERS 2.00% if:	Member begins participating on or after 8/1/2004 but before 9/1/2008.	
	KERS 1.97% if:	Member does not have 13 months of service credit for 1/1/1998-1/1/1999.	
	KERS 2.00% if:	Member has 13 months of service credit from 1/1/1998-1/1/1999.	
	KERS 2.20% if:	Member has 20 or more years of service, including 13 months from 1/1/1998-1/1/1999 and retires by 1/1/2009.	

If a member retires with less than four years of service credit, the member's benefit is equal to the actuarially equivalent of two times their member contribution balance with interest.

Benefit Formula Nonhazardous
Tier 2: Members whose participation began on or after 9/1/2008 but before 1/1/2014

Final Compensation	Benefit Factor			Years of Service
Average of the last five years of compensation	CERS & KERS increasing percent based on service at retirement up to 30 years* plus 2.00% for each year of service over 30 years		Member begins participating on or after 9/1/2008 but before 1/1/2014.	Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program).
	*Service	Multiplier		
	10 years or less	1.10%		
	10-20 years	1.30%		
	20-26 years	1.50%		
	26-30 years	1.75%		

Benefit Formula for Hazardous for Tier 1: Members whose participation began before 9/1/2008			
Final Compensation	**Benefit Factor**		**Years of Service**
Average of the three highest years of compensation	CERS 2.50% if: KERS 2.49% if: SPRS 2.50% if:	Member begins participating before 9/1/2008.	Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program).
If a member retires with less than four years of service, the member's benefit is equal to the actuarially equivalent of two times their member contribution balance with interest.			

Benefit Formula for Hazardous for Tier 2: Members whose participation began on or after 9/1/2008 but before 1/1/2014				
Final Compensation	**Benefit Factor**			**Years of Service**
Average of the three highest complete years of compensation	CERS, KERS, & SPRS increasing percent based on service at retirement*		Member begins participating on or after 9/1/2008 but before 1/1/2014.	Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program).
	*Service	Multiplier		
	10 years or less	1.30%		
	10-20 years	1.50%		
	20-25 years	2.25%		
	25+ years	2.50%		

Benefit Formula for Hazardous for Tier 3: Members whose participation began on or after 1/1/2014

Each year that the member is active, a 7.50% employer pay credit and the employee's 8.00% contribution will be credited to each member's hypothetical cash balance account. The hypothetical account will earn interest at a minimum rate of 4%, annually. If the geometric average net investment return for the previous five years exceeds 4%, then the hypothetical account will be credited with an additional amount of interest in that year equal to 75% of the amount of the return which exceeds 4%. All interest credits will be applied to the hypothetical account balance on June 30 based on the account balance as of June 30 of the previous year. At retirement, the member's hypothetical account balance may be converted into an annuity based on an actuarial factor.

Benefit Formula
Tier 3: Members whose participation began on or after 1/1/2014
Accumulated Account Balance / Actuarial Factor = Monthly Life Annuity

	Accumulated Account Balance				
	Member Contributions	**Employer Contributions**	**Base Annual Interest**	**Upside Sharing Interest (FY 2023)**	**Actuarial Factor**
CERS Nonhazardous	5.00%	4.00%	4.00%	5.89%	See www.kyret.ky.gov for most recent Actuarial Factors
CERS Hazardous	8.00%	7.50%	4.00%	6.01%	
KERS Nonhazardous	5.00%	4.00%	4.00%	5.21%	
KERS Hazardous	8.00%	7.50%	4.00%	5.80%	
SPRS	8.00%	7.50%	4.00%	5.57%	

Note: Accumulated Account Balance is comprised of member contributions, employer contributions, annual interest and annual upside sharing interest. For additional information on the calculation of the annual interest for Tier 3 see Upside Sharing Interest in Note B.

Note: Please see Plan Provisions for additional details.

Summary of Benefit Provisions CERS, KERS SPRS Plans

Post-Retirement Death Benefits

If the member is receiving a monthly benefit based on at least four (4) years of creditable service, the retirement system will pay a $5,000 death benefit payment to the beneficiary named by the member specifically for this benefit. If a member has more than one account with the systems administered by KPPA, only one death benefit shall be paid. A death benefit is subject to taxation.

Disability Benefits

Members participating before 8/1/2004 may qualify for disability retirement provided the member has at least 60 months of service credit* and is not eligible for an unreduced benefit. Additional service credit may be added for computation of benefits under the benefit formula.

Members participating on or after 8/1/2004 but before 1/1/2014 may qualify for disability retirement provided the member has at least 60 months of service credit*. Benefits are computed as 20% for Nonhazardous and 25% for Hazardous of member's monthly final rate of pay or the amount calculated under the Benefit Formula based upon actual service, whichever is higher.

Members participating on or after 1/1/2014 may qualify for disability retirement provided the member has at least 60 months of service credit. The account which includes member contributions, employer pay credits and interest credits can be withdrawn from the System as a lump sum or an annuity equal to the greater Benefits are computed as 20% for Nonhazardous and 25% for Hazardous of the member's monthly final rate of pay or the annuity computed as if eligible for unreduced retirement benefit, whichever is greater.

Members disabled in the line of duty, or due to a duty-related injury, may be eligible for special benefits.

*Service requirements may be waived if line of duty or duty related.

Pre-Retirement Death Benefits

The beneficiary, which shall be the spouse unless another person was named beneficiary after the marriage date, of a deceased active member is eligible for a monthly benefit if the member died while in the line of duty; or due to a duty-related injury, with a minimum of one (1) month of service credit. If the member's death did not occur in the line of duty or as a result of a duty-related injury, the beneficiary is eligible for a monthly benefit under the following conditions: 1. The member was eligible to retire at the time of death. 2. The member was under the age of 65 (for nonhazardous members) or under the age of 55 (for hazardous members) with a minimum of 60 months of service credit and was employed by a participating agency at the time of death. 3. The member was no longer employed by a participating agency at the time of death but had accumulated a minimum of 144 months of service credit. If the deceased member does not meet one of the eligibility requirements the beneficiary will receive a lump-sum payment from the member's accumulated account balance..

Cost of Living Adjustment (COLA)

Senate Bill 2 passed during the 2013 legislative session, eliminated all future COLAs unless the State Legislature so authorizes on a biennial basis and either (i) the system is over 100% funded or (ii) the Legislature appropriates sufficient funds to pay the increased liability for the COLA.

Health Insurance Benefits

For members participating prior to July 1, 2003, CERS, KERS, and SPRS pay a percentage of the monthly premium for single coverage based upon the service credit accrued at retirement. Members participating on or after July 1, 2003, and before September 1, 2008, are required to earn a minimum of 10 years (120 months) of service credit to qualify for health insurance benefits upon retirement. Members participating on or after September 1, 2008, are required to earn a minimum of 15 years (180 months) of service credit to qualify for health insurance benefits upon retirement. The monthly health insurance contribution will be $10 for each year of nonhazardous and $15 for each year of hazardous earned service increased by 1.5% annually.

Refunds

Upon termination of employment, a refund of the member's accumulated account balance is available to the member.

Interest on Accounts

For employees participating prior to September 1, 2008, the interest paid is set by the Boards of Trustees and will not be less than 2.0%. For employees participating on or after September 1, 2008, but before January 1, 2014, interest will be credited at a rate of 2.5%. For employees participating on or after January 1, 2014, interest will be credited at a minimum rate of 4.0% (see Note B for additional details on the annual interest calculation).

Benefit Changes since the Prior Valuation

House Bill 506 passed during the 2023 legislative session reinstated the Partial Lump Sum Options (PLSO) form of payment for members retiring on or after January 1, 2024. The bill introduced an expansion of the lump-sum payment options, allowing for payouts equal to 48 or 60 times the member's Basic, or Survivorship 100% monthly retirement allowance. The lifetime monthly retirement allowance is adjusted actuarially to account for the selected lump sum payment option.

House Bill 506 additionally modified the minimum separation period required for a retiree to reemploy with a participating employer of the Systems administered by the KPPA while still receiving their retirement allowance. This adjustment standardized the separation period to one month for all scenarios within each plan for retirement dates effective January 1, 2024 and after.

STATISTICAL

TABLE OF CONTENTS

Plan Statistics

Definitions

Active members are those members who are currently employed by a participating agency and contributing to KPPA as a condition of employment.

Inactive members are those members who are no longer employed with a participating agency but have not yet retired or taken a refund of contributions.

Retired members include both members and beneficiaries who are receiving a monthly benefit from KPPA.

A single member may have multiple accounts, which contribute to one pension. Each person is only counted once in the Membership by System report. A member who has both a membership account and a retired account is included in the retired count. Members who have multiple membership accounts are included under the system where they most recently contributed. Members who have more than one retirement account are included in the system with the greatest service credit. If the retired accounts have equal service credit, they are counted first in SPRS, CERS Hazardous, KERS Hazardous, CERS Nonhazardous, then KERS Nonhazardous. These tables do not include individuals receiving payments under dependent child accounts, Qualified Domestic Relations Orders, or multiple beneficiary accounts.

CERS Nonhazardous Membership As of June 30

Fiscal Year	Active	Inactive	Retired	Total
2014	82,494	70,231	46,112	198,837
2015	82,969	72,965	48,515	204,449
2016	83,346	75,904	51,673	210,923
2017	84,401	78,940	54,018	217,359
2018	84,435	81,608	56,629	222,672
2019	84,632	85,300	58,933	228,865
2020	83,458	90,673	60,877	235,008
2021	80,378	95,682	63,566	239,626
2022	80,263	101,508	65,266	247,037
2023	81,217	106,903	66,935	255,055

CERS Hazardous Membership As of June 30

Fiscal Year	Active	Inactive	Retired	Total
2014	9,189	2,038	6,066	17,293
2015	9,188	2,142	6,389	17,719
2016	9,139	2,309	6,834	18,282
2017	9,321	2,442	7,186	18,949
2018	9,285	2,581	7,647	19,513
2019	9,402	2,702	8,000	20,104
2020	9,350	2,924	8,431	20,705
2021	9,138	3,243	8,814	21,195
2022	9,149	3,481	9,121	21,751
2023	9,181	3,687	9,448	22,316

KERS Nonhazardous Membership As of June 30

Fiscal Year	Active	Inactive	Retired	Total
2014	40,500	41,213	38,022	119,735
2015	39,289	42,479	38,827	120,595
2016	38,121	43,926	40,099	122,146
2017	36,725	44,848	40,813	122,386
2018	34,845	45,768	42,175	122,788
2019	33,432	46,721	42,874	123,027
2020	31,190	48,583	43,592	123,365
2021	29,709	49,679	44,469	123,857
2022	29,069	50,529	44,952	124,550
2023	30,854	51,001	44,975	126,830

KERS Hazardous Membership As of June 30

Fiscal Year	Active	Inactive	Retired	Total
2014	4,094	3,318	2,467	9,879
2015	3,932	3,761	2,575	10,268
2016	3,987	4,067	2,739	10,793
2017	4,061	4,363	2,823	11,247
2018	3,963	4,716	3,010	11,689
2019	3,779	5,094	3,146	12,019
2020	4,112	5,838	3,242	13,192
2021	3,809	6,513	3,339	13,661
2022	3,607	6,889	3,440	13,936
2023	3,875	7,222	3,459	14,556

SPRS Membership As of June 30

Fiscal Year	Active	Inactive	Retired	Total
2014	861	239	1,279	2,379
2015	940	257	1,324	2,521
2016	924	262	1,379	2,565
2017	910	278	1,393	2,581
2018	891	290	1,445	2,626
2019	899	313	1,484	2,696
2020	798	349	1,523	2,670
2021	775	389	1,540	2,704
2022	844	402	1,562	2,808
2023	868	432	1,552	2,852

Kentucky Public Pensions Authority Membership Totals As of June 30

Fiscal Year	Active	Inactive	Retired	Total
2014	137,138	117,039	93,946	348,123
2015	136,318	121,604	97,630	355,552
2016	135,517	126,468	102,724	364,709
2017	135,418	130,871	106,233	372,522
2018	133,419	134,963	110,906	379,288
2019	132,144	140,130	114,437	386,711
2020	128,908	148,367	117,665	394,940
2021	123,809	155,506	121,728	401,043
2022	122,932	162,809	124,341	410,082
2023	125,995	169,245	126,369	421,609

Principal Participating Employers in CERS As of June 30, 2023

Participating Employer	Rank	Covered Employees	% of Total System
JEFFERSON COUNTY BOARD OF EDUCATION	1	5,029	5.54%
LOUISVILLE JEFFERSON COUNTY METRO GOVERNMENT	2	4,495	4.96%
FAYETTE COUNTY BOARD OF EDUCATION	3	2,009	2.22%
LEXINGTON FAYETTE URBAN COUNTY GOVERNMENT	4	1,635	1.80%
JUDICIAL DEPARTMENT ADMINISTRATIVE OFFICE OF THE COURTS	5	1,442	1.59%
BOONE COUNTY BOARD OF EDUCATION	6	1,143	1.26%
HARDIN COUNTY BOARD OF EDUCATION	7	1,053	1.16%
BULLITT COUNTY BOARD OF EDUCATION	8	1,040	1.15%
SCOTT COUNTY BOARD OF EDUCATION	9	874	0.96%
WARREN COUNTY BOARD OF EDUCATION	10	872	0.96%
ALL OTHERS		71,093	78.40%
Total		**90,685**	**100.00%**

Schedule of Participating Employers in CERS As of June 30, 2023

Agency Classification	Number of Agencies	Covered Employees
Airport Boards	5	538
Ambulance Services	18	413
Area Development Districts	14	686
Boards of Education	171	45,868
Cities	222	10,381
Community Action Agencies	21	2,820
Conservation Districts	49	63
County Attorneys	75	543
County Clerks	16	580
Development Authorities	6	8
Fire Departments	29	1,140
Fiscal Courts	118	10,946
Hospitals & Clinics (incl. Dental)	1	298
Housing Authorities	39	410
Jailers	2	69
Libraries	86	1,298
Other Retirement Systems	2	3
P1 State Agencies	4	1,443
Parks and Recreation	6	63
Planning Commissions	16	204
Police Departments	2	13
Riverport Authorities	5	71
Sanitation Districts	8	320
Sheriff Departments	12	700
Special Districts & Boards	47	1,401
Tourist Commissions	25	199
Urban Government Agencies	2	6,130
Utility Boards	119	4,077
Total	**1,120**	**90,685**

Total Employees By Tier Levels

Tier 1	**25,830**
Tier 2	**12,575**
Tier 3	**52,280**

Principal Participating Employers in KERS As of June 30, 2023

Participating Employer	Rank	Covered Employees	% of Total System
DEPARTMENT FOR COMMUNITY BASED SERVICES	1	4,341	12.29%
DEPARTMENT OF HIGHWAYS	2	3,560	10.08%
DEPARTMENT OF CORRECTIONS	3	3,351	9.49%
JUDICIAL DEPARTMENT ADMINISTRATIVE OFFICE OF THE COURTS	4	1,443	4.09%
DEPARTMENT OF JUVENILE JUSTICE	5	1,036	2.93%
UNIFIED PROSECUTORIAL SYSTEM	6	899	2.55%
KENTUCKY STATE POLICE	7	867	2.46%
DEPARTMENT OF REVENUE	8	686	1.94%
DEPARTMENT OF PARKS	9	622	1.76%
ENVIRONMENTAL PROTECTION	10	618	1.75%
ALL OTHERS		17,887	50.66%
Total		**35,310**	**100.00%**

Schedule of Participating Employers in KERS As of June 30, 2023

Agency Classification	Number of Agencies	Covered Employees
County Attorneys	58	268
Health Departments	60	2,158
Master Commissioner	31	54
Non-P1 State Agencies	33	597
Other Retirement Systems	1	20
P1 State Agencies	133	28,272
Regional Mental Health Units	10	2,433
Universities	7	1,508
Total	**333**	**35,310**

Total Employees By Tier Levels

Tier 1	**13,252**
Tier 2	**5,354**
Tier 3	**16,704**

Schedule of Participating Employers in SPRS As of June 30, 2023

Agency Classification	Number of Agencies	Covered Employees
Kentucky State Police - Uniformed Police Officers	1	868

Total Employees By Tier Levels

Tier 1	**325**
Tier 2	**180**
Tier 3	**363**

Average Monthly Benefit by Length of Service in CERS As of June 30, 2023 (in Whole $)

Service Credit Range	CERS Nonhazardous		CERS Hazardous	
	Number of Accounts	Average Monthly Benefit	Number of Accounts	Average Monthly Benefit
Under 5 years	11,156	$169	1,303	$437
5 or more but less than 10	11,855	349	1,173	724
10 or more but less than 15	12,158	549	1,164	1,291
15 or more but less than 20	10,312	836	1,299	1,898
20 or more but less than 25	13,128	1,038	4,804	2,708
25 or more but less than 30	14,618	1,958	1,629	3,714
30 or more but less than 35	3,233	2,719	429	4,443
35 or more	881	3,819	85	5,529
Total	**77,341**	**$979**	**11,886**	**$2,257**

Average Monthly Benefit by Length of Service in KERS As of June 30, 2023 (in Whole $)

Service Credit Range	KERS Nonhazardous		KERS Hazardous	
	Number of Accounts	Average Monthly Benefit	Number of Accounts	Average Monthly Benefit
Under 5 years	6,933	$178	970	$206
5 or more but less than 10	6,240	442	892	576
10 or more but less than 15	5,901	739	830	1,042
15 or more but less than 20	5,052	1,089	754	1,571
20 or more but less than 25	5,523	1,438	1,319	2,057
25 or more but less than 30	13,704	2,301	215	2,929
30 or more but less than 35	6,681	3,239	62	3,746
35 or more	2,490	4,600	6	4,231
Total	**52,524**	**$1,645**	**5,048**	**$1,261**

Average Monthly Benefit by Length of Service in SPRS As of June 30, 2023 (in Whole $)

Service Credit Range	Number of Accounts	Average Monthly Benefit
Under 5 years	151	$562
5 or more but less than 10	58	951
10 or more but less than 15	73	1,452
15 or more but less than 20	126	2,142
20 or more but less than 25	561	2,752
25 or more but less than 30	499	3,803
30 or more but less than 35	221	4,782
35 or more	60	6,169
Total	**1,749**	**$3,079**

Note: These tables reflect the Average Monthly Pension Benefit. A single member may have multiple accounts, which contribute to one pension. These tables do not reflect dependent child accounts, Qualified Domestic Relations Order (QDRO) accounts or multiple beneficiary accounts.

Fiduciary Net Position - CERS

As of June 30 ($ in Thousands)

	Nonhazardous			Hazardous		
Fiscal Year	Pension	Insurance	Total	Pension	Insurance	Total
2014	$6,528,147	$1,878,711	$8,406,858	$2,087,002	$1,030,303	$3,117,305
2015	6,440,800	1,920,946	8,361,746	2,078,202	1,056,480	3,134,682
2016	6,141,396	1,908,550	8,049,946	2,010,177	1,056,097	3,066,274
2017	6,739,142	2,160,553	8,899,695	2,227,679	1,179,313	3,406,992
2018	7,086,322	2,346,767	9,433,089	2,361,047	1,268,272	3,629,319
2019	7,242,975	2,486,458	9,729,433	2,429,613	1,324,809	3,754,422
2020	7,110,889	2,498,051	9,608,940	2,395,688	1,305,132	3,700,820
2021	8,670,667	3,141,786	11,812,453	2,934,421	1,607,811	4,542,232
2022	8,062,346	2,981,224	11,043,570	2,736,928	1,503,977	4,240,905
2023	$8,781,440	$3,289,533	$12,070,973	$3,055,797	$1,613,586	$4,669,383

Fiduciary Net Position - KERS

As of June 30 ($ in Thousands)

	Nonhazardous			Hazardous		
Fiscal Year	Pension	Insurance	Total	Pension	Insurance	Total
2014	$2,578,290	$646,905	$3,225,195	$561,484	$433,525	$995,009
2015	2,327,782	665,639	2,993,421	552,468	439,113	991,581
2016	1,980,292	668,318	2,648,610	527,880	437,397	965,277
2017	2,092,781	781,406	2,874,187	605,921	484,442	1,090,363
2018	2,048,890	846,762	2,895,652	651,173	513,384	1,164,557
2019	2,286,625	942,136	3,228,761	687,877	527,108	1,214,985
2020	2,362,231	1,006,498	3,368,729	697,366	514,740	1,212,106
2021	3,085,014	1,353,123	4,438,137	874,928	624,889	1,499,817
2022	3,076,743	1,301,522	4,378,265	819,237	579,902	1,399,139
2023	$3,607,206	$1,465,489	$5,072,695	$902,567	$616,322	$1,518,889

Fiduciary Net Position - SPRS

As of June 30 ($ in Thousands)

Fiscal Year	Pension	Insurance	Total
2014	$260,974	$164,958	$425,932
2015	247,229	164,714	411,943
2016	218,013	160,949	378,962
2017	256,383	178,191	434,574
2018	268,425	189,994	458,419
2019	287,242	200,128	487,370
2020	295,044	200,245	495,289
2021	357,660	246,004	603,664
2022	552,926	230,015	782,941
2023	$592,826	$246,797	$839,623

Fiduciary Net Position - KPPA

As of June 30 ($ in Thousands)

Fiscal Year	Pension	Insurance	Total
2014	$12,015,897	$4,154,402	$16,170,299
2015	11,646,481	4,246,892	15,893,373
2016	10,877,757	4,231,311	15,109,068
2017	11,921,906	4,783,905	16,705,811
2018	12,415,856	5,165,179	17,581,035
2019	12,934,332	5,480,639	18,414,971
2020	12,861,218	5,524,666	18,385,884
2021	15,922,690	6,973,613	22,896,303
2022	15,248,180	6,596,640	21,844,820
2023	$16,939,836	$7,231,727	$24,171,563

Note: For additional historical data for all charts presented, please visit our website for previous annual reports at https://kyret.ky.gov/Publications/Pages/Annual-Reports.aspx

Changes in Fiduciary Net Position - CERS Nonhazardous Pension Fund

As of June 30 ($ in Thousands)

Additions	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Members' Contributions	$122,459	$133,637	$133,987	$150,714	$160,370	$159,064	$168,994	$165,698	$186,648	$147,769
Employers' Contributions	324,231	297,714	282,767	331,493	355,473	393,302	475,311	472,196	606,772	645,940
Health Insurance Contributions (HB1)	6,109	6,674	7,687	9,158	10,826	11,801	5	(1)	(60)	(30)
Net Investment Income (Loss)	895,531	110,569	(40,799)	825,901	578,377	394,558	56,682	1,784,231	(500,996)	815,417
Bank of America Settlement	-	10,280	-	-	-	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	361	44	-	-	-	-
Employer Pay Credit										51,694
Pension Spiking	-	850	1,339	2,061	2,544	151	105	32	35	46
Total Additions	**1,348,330**	**559,724**	**384,981**	**1,319,327**	**1,107,951**	**958,920**	**701,097**	**2,422,156**	**292,399**	**1,660,836**
Deductions										
Benefit Payments	582,850	615,335	651,247	687,460	726,568	766,221	795,960	826,749	858,260	894,351
Refunds	14,286	13,524	13,754	14,430	14,608	14,387	14,918	13,862	19,789	23,263
Administrative Expenses	18,615	18,212	19,078	19,614	19,592	21,659	22,304	21,767	22,670	24,128
Capital Project Expenses	-	-	307	77	-	-	-	-	-	-
Total Deductions	**615,751**	**647,071**	**684,385**	**721,581**	**760,768**	**802,267**	**833,182**	**862,378**	**900,719**	**941,742**
Net Increase (Decrease) in Fiduciary Net Position	**$732,579**	**($87,347)**	**($299,404)**	**$597,746**	**$347,183**	**$156,653**	**($132,085)**	**$1,559,778**	**($608,321)**	**$719,094**

CERS Nonhazardous Insurance Fund

As of June 30 ($ in Thousands)

Additions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Employers' Contributions	$121,161	$115,836	$108,269	$117,310	$120,798	$135,570	$124,740	$124,697	$118,550	$101,121
Net Investment Income (Loss)	232,330	36,731	(1,422)	259,586	197,520	133,697	8,656	619,593	(170,699)	306,003
Retired Re-employed (HB1)	2,117	3,608	3,567	3,402	3,821	4,085	4,528	5,206	4,816	4,922
Member Drug Reimbursement	6	-	-	1	11	6	4	3	1	-
Premiums Received from Retirees	1,450	582	629	707	637	616	596	555	534	294
Humana Gain Share	-	-	-	-	-	3,574	-	20,676	8,912	5,951
Northern Trust Settlement	-	-	-	-	75	9	-	-	-	-
Health Insurance Contributions (HB1)	-	-	-	-	-	-	12,959	13,614	15,985	17,782
Total Additions	**357,064**	**156,757**	**111,043**	**381,006**	**322,862**	**277,557**	**151,483**	**784,344**	**(21,901)**	**436,073**
Deductions										
Health Insurance Premiums	96,804	113,734	122,713	124,573	131,631	133,005	135,094	136,263	134,428	123,587
Administrative Expenses	508	782	726	789	761	877	903	884	933	937
Self-Funded Healthcare Costs	-	-	-	3,635	4,248	3,979	3,887	3,462	3,288	3,240
Excise Tax Insurance	-	6	-	6	6	6	6	-	12	-
Total Deductions	**97,312**	**114,522**	**123,439**	**129,003**	**136,646**	**137,867**	**139,890**	**140,609**	**138,661**	**127,764**
Net Increase (Decrease) in Fiduciary Net Position	**$259,751**	**$42,235**	**($12,396)**	**$252,003**	**$186,216**	**$139,690**	**$11,593**	**$643,735**	**($160,562)**	**$308,309**

Changes in Fiduciary Net Position - CERS Hazardous Pension Fund

As of June 30 ($ in Thousands)

Additions	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Members' Contributions	$42,631	$46,609	$51,554	$60,102	$61,089	$58,661	$63,236	$62,367	$69,565	$56,988
Employers' Contributions	115,240	107,515	104,952	114,315	124,953	137,664	168,201	172,089	221,968	286,353
Employer Pay Credit										21,683
Health Insurance Contributions (HB1)	1,091	1,084	1,418	1,708	2,173	2,458	1	2	(104)	(20)
Net Investment Income (Loss)	288,490	37,104	(9,021)	270,473	192,174	132,970	15,992	600,730	(175,431)	281,965
Bank of America Settlement	-	2,865	-	-	-	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	111	14	-	-	-	-
Pension Spiking	-	557	762	1,632	2,707	387	242	116	60	186
Total Additions	**447,452**	**195,734**	**149,665**	**448,230**	**383,207**	**332,154**	**247,672**	**835,304**	**116,058**	**647,155**
Deductions										
Benefit Payments	189,635	200,134	213,448	226,985	244,119	259,008	275,802	290,000	305,790	319,594
Refunds	2,664	3,111	2,879	2,315	4,214	2,854	3,814	4,662	5,766	6,568
Administrative Expenses	1,721	1,289	1,337	1,421	1,504	1,726	1,981	1,910	1,995	2,124
Capital Project Expenses	-	-	26	7	-	-	-	-	-	-
Total Deductions	**194,020**	**204,534**	**217,690**	**230,728**	**249,837**	**263,588**	**281,597**	**296,572**	**313,551**	**328,286**
Net Increase (Decrease) in Fiduciary Net Position	**$253,431**	**$(8,800)**	**$(68,025)**	**$217,502**	**$133,370**	**$68,566**	**$(33,925)**	**$538,732**	**$(197,493)**	**$318,869**

CERS Hazardous Insurance Fund

As of June 30 ($ in Thousands)

Additions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Employers' Contributions	$74,265	$71,008	$66,757	$50,743	$55,027	$61,106	$56,739	$58,451	$58,374	$48,792
Net Investment Income (Loss)	125,278	20,283	1,102	142,929	109,004	72,580	2,237	322,817	(78,453)	148,739
Retired Re-employed (HB1)	526	770	862	794	975	1,166	1,158	1,348	1,530	1,611
Member Drug Reimbursement	-	-	-	-	-	-	-	-	-	-
Premiums Received from Retirees	32	10	(106)	(301)	(265)	(53)	(32)	(149)	(271)	(546)
Humana Gain Share	-	-	-	-	-	506	-	2,990	1,259	914
Northern Trust Settlement	-	-	-	-	40	5	-	-	-	-
Health Insurance Contributions (HB1)	-	-	-	-	-	-	2,760	3,096	3,758	4,278
Total Additions	**200,101**	**92,071**	**68,615**	**194,165**	**164,781**	**135,310**	**62,862**	**388,553**	**(13,803)**	**203,788**
Deductions										
Health Insurance Premiums	60,843	65,553	68,518	70,407	74,844	78,190	81,849	85,151	89,319	93,485
Administrative Expenses	275	339	480	381	376	434	462	466	502	522
Self-Funded Healthcare Costs	-	-	-	160	603	149	228	257	210	172
Total Deductions	**61,117**	**65,894**	**68,998**	**70,948**	**75,823**	**78,773**	**82,539**	**85,874**	**90,031**	**94,179**
Net Increase (Decrease) in Fiduciary Net Position	**$138,983**	**$26,177**	**$(383)**	**$123,216**	**$88,958**	**$56,537**	**$(19,677)**	**$302,679**	**$(103,834)**	**$109,609**

Changes in Fiduciary Net Position - KERS Nonhazardous Pension Fund

As of June 30 ($ in Thousands)

Additions	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Members' Contributions	$92,941	$100,424	$101,677	$100,544	$104,972	$93,759	$96,594	$90,202	$89,607	$84,579
Employers' Contributions	296,836	520,948	512,670	644,803	619,988	948,866	948,578	1,134,180	141,027	114,427
Employer Pay Credit										22,018
General Fund Appropriations	-	-	-	58,193	67,574	75,858	-	-	912,705	240,000
Health Insurance Contributions (HB1)	4,546	4,181	4,817	5,156	5,786	5,963	1	(8)	(13)	(12)
Actuarially Accrued Liability Contributions										898,545
Employer Cessation	-	-	-	53,215	17	10,643	20	-	63,113	-
Net Investment Income (Loss)	337,923	44,570	(20,662)	220,985	147,577	114,918	53,696	528,439	(165,904)	220,258
Bank of America Settlement	-	8,442	-	-	-	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	301	37	-	-	-	-
Pension Spiking	-	743	414	909	1,564	95	(6)	52	24	16
Total Additions	**732,246**	**679,308**	**598,916**	**1,083,805**	**947,779**	**1,250,139**	**1,098,883**	**1,752,865**	**1,040,559**	**1,579,831**
Deductions										
Benefit Payments	889,937	905,790	923,288	948,489	967,374	988,349	999,813	1,009,501	1,023,375	1,023,704
Refunds	13,627	13,552	12,130	11,819	13,603	12,342	11,523	8,953	12,116	11,847
Administrative Expenses	11,145	10,474	10,807	10,974	10,692	11,712	11,941	11,627	13,339	13,817
Capital Project Expenses	-	-	181	34	-	-	-	-	-	-
Total Deductions	**914,709**	**929,816**	**946,406**	**971,316**	**991,669**	**1,012,403**	**1,023,277**	**1,030,081**	**1,048,830**	**1,049,368**
Net Increase (Decrease) in Fiduciary Net Position	**$(182,463)**	**$(250,508)**	**$(347,490)**	**$112,489**	**$(43,890)**	**$237,736**	**$75,606**	**$722,784**	**$(8,271)**	**$530,463**

KERS Nonhazardous Insurance Fund

As of June 30 ($ in Thousands)

Additions	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Employers' Contributions	$164,176	$132,208	$131,935	$133,024	$132,364	$173,576	$170,479	$153,571	$31,611	$35,549
Actuarially Accrued Liabiltiy Contributions	-	-	-	-	-	-	-	-	101,637	87,674
Net Investment Income (Loss)	96,738	8,690	(3,904)	90,915	61,331	43,202	10,624	258,595	(85,555)	128,052
Retired Re-employed (HB1)	2,433	3,732	3,880	3,765	4,055	3,996	4,502	4,705	5,041	5,885
Member Drug Reimbursement	8	-	-	1	5	3	2	-	-	4
Premiums Received from Retirees	918	272	240	248	216	184	183	182	182	(27)
Humana Gain Share Payment	-	-	-	-	-	3,079	-	17,167	7,321	4,851
Employer Cessations	-	-	-	15,567	-	1,391	25	28,400	2,405	-
Northern Trust Settlement	-	-	-	-	32	4	-	-	-	-
Health Insurance Contribution (HB1)	-	-	-	-	-	-	6,127	6,326	6,560	8,370
Total Additions	**264,273**	**144,902**	**132,151**	**243,520**	**198,003**	**225,435**	**191,942**	**468,946**	**69,202**	**270,358**
Deductions										
Health Insurance Premiums	112,671	123,127	126,550	127,648	130,069	127,221	125,006	119,897	118,451	103,952
Administrative Expenses	736	893	818	861	760	875	847	815	821	771
Self-Funded Healthcare Costs	-	2,145	2,095	1,920	1,819	1,962	1,724	1,609	1,525	1,668
Excise Tax Insurance	-	3	6	3	3	3	3	-	6	-
Total Deductions	**113,407**	**126,168**	**129,469**	**130,432**	**132,651**	**130,061**	**127,580**	**122,321**	**120,803**	**106,391**
Net Increase (Decrease) in Fiduciary Net Position	**$150,866**	**$18,734**	**$2,679**	**$113,088**	**$65,352**	**$95,374**	**$64,362**	**$346,625**	**$(51,601)**	**$163,967**

Changes in Fiduciary Net Position - KERS Hazardous Pension Fund
As of June 30 ($ in Thousands)

Additions	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Members' Contributions	$11,995	$12,670	$15,055	$17,523	$17,891	$17,118	$19,769	$19,961	$20,588	$17,459
Employers' Contributions	11,670	28,374	23,690	37,630	32,790	55,229	59,096	62,182	59,052	64,020
Employer Pay Credit										8,758
General Fund Appropriations	-	-	-	15,000	10,000	-	-	-	-	-
Health Insurance Contributions (HB1)	551	537	684	811	909	934	4	3	(5)	(7)
Net Investment Income (Loss)	80,724	8,701	(1,652)	70,993	51,848	36,704	6,805	174,922	(51,841)	77,261
Bank of America Settlement	-	767	-	-	-	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	33	4	-	-	-	-
Pension Spiking	-	162	70	344	871	29	19	18	3	29
Total Additions	**104,941**	**51,211**	**37,847**	**142,301**	**114,342**	**110,018**	**85,693**	**257,086**	**27,797**	**167,520**
Deductions										
Benefit Payments	54,320	56,774	59,306	61,231	65,616	69,527	71,861	73,889	77,047	78,636
Refunds	2,830	2,609	2,211	2,106	2,501	2,684	3,168	4,380	4,976	4,041
Administrative Expenses	897	844	903	919	975	1,103	1,176	1,255	1,465	1,513
Capital Project Expenses	-	-	15	4	-	-	-	-	-	-
Total Deductions	**58,048**	**60,227**	**62,435**	**64,260**	**69,092**	**73,314**	**76,205**	**79,524**	**83,488**	**84,190**
Net Increase (Decrease) in Fiduciary Net Position	**$46,892**	**$(9,016)**	**$(24,588)**	**$78,041**	**$45,250**	**$36,704**	**$9,488**	**$177,562**	**$(55,691)**	**$83,330**

KERS Hazardous Insurance Fund

As of June 30 ($ in Thousands)

Additions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Employers' Contributions	$23,336	$14,173	$15,929	$4,688	$4,302	$3,725	$4,482	$23	$1	$37
Net Investment Income (Loss)	52,214	7,793	(882)	59,188	42,567	28,049	638	126,475	(27,406)	52,991
Retired Re-employed (HB1)	538	709	837	932	986	1,245	1,294	1,276	1,280	1,452
Member Drug Reimbursement	-	-	-	-	-	-	1	-	1	-
Premiums Received from Retirees	37	14	(13)	(51)	(50)	(19)	(5)	(11)	(54)	(69)
Humana Gain Share	-	-	-	-	-	213	-	1,253	548	368
Northern Trust Settlement	-	-	-	-	18	2	-	-	-	-
Health Insurance Contributions (HB1)	-	-	-	-	-	-	1,100	1,164	1,232	1,592
Total Additions	**76,126**	**22,689**	**15,871**	**64,757**	**47,823**	**33,215**	**7,510**	**130,180**	**(24,398)**	**56,371**
Deductions										
Health Insurance Premiums	15,405	17,000	17,490	17,562	18,697	19,280	19,630	19,800	20,355	19,748
Administrative Expenses	78	101	97	105	104	117	123	118	125	123
Self-Funded Healthcare Costs	-	-	-	45	79	94	125	112	109	80
Excise Tax Insurance	-	-	-	-	-	-	-	-	-	-
Total Deductions	**15,482**	**17,101**	**17,587**	**17,712**	**18,880**	**19,491**	**19,878**	**20,030**	**20,589**	**19,951**
Net Increase (Decrease) in Fiduciary Net Position	**$60,642**	**$5,588**	**$(1,716)**	**$47,045**	**$28,943**	**$13,724**	**$(12,368)**	**$110,150**	**$(44,987)**	**$36,420**

Changes in Fiduciary Net Position - SPRS Pension Fund

As of June 30 ($ in Thousands)

Additions	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Members' Contributions	$5,005	$5,150	$5,149	$5,349	$5,522	$5,062	$4,767	$4,752	$4,773	$5,250
Employers' Contributions	20,279	31,444	25,723	38,028	36,486	58,947	58,358	59,262	62,341	56,536
Employer Pay Credit										1,585
General Fund Appropriations	-	-	-	25,000	10,000	1,086	1,086	384	215,000	-
Health Insurance Contributions (HB1)	70	94	113	131	155	176	-	-	(26)	(8)
Net Investment Income (Loss)	40,374	3,427	(3,841)	26,795	18,487	14,863	6,359	61,966	(22,148)	40,801
Bank of America Settlement	-	646	-	-	-	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	21	3	-	-	-	-
Pension Spiking	-	546	99	210	392	15	9	4	-	-
Total Additions	**65,729**	**41,307**	**27,243**	**95,513**	**71,063**	**80,152**	**70,579**	**126,368**	**259,940**	**104,164**
Deductions										
Benefit Payments	53,026	54,766	56,268	56,935	58,805	60,948	62,423	63,249	64,121	63,805
Refunds	214	85	11	26	22	162	88	273	280	166
Administrative Expenses	215	201	176	181	194	225	266	230	273	293
Capital Project Expenses	-	-	4	1	-	-	-	-	-	-
Total Deductions	**53,454**	**55,052**	**56,459**	**57,143**	**59,021**	**61,335**	**62,777**	**63,752**	**64,674**	**64,264**
Net Increase (Decrease) in Fiduciary Net Position	**$12,276**	**$(13,745)**	**$(29,216)**	**$38,370**	**$12,042**	**$18,817**	**$7,802**	**$62,616**	**$195,266**	**$39,900**

SPRS Insurance Fund
As of June 30 ($ in Thousands)

Additions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Employers' Contributions	$14,498	$10,379	$10,228	$9,222	$9,397	$13,282	$13,133	$9,284	$8,782	$9,289
Net Investment Income (Loss)	20,508	2,921	(48)	21,570	16,420	10,766	1,108	50,051	(10,787)	21,426
Retired Re-employed (HB1)	(5)	3	9	-	-	6	-	-	-	-
Member Drug Reimbursement	-	-	-	-	-	-	-	-	-	-
Premiums Received from Retirees	11	1	(29)	(55)	(41)	(13)	(12)	(14)	(27)	(131)
Humana Gain Share	-	-	-	-	-	144	-	811	342	224
Northern Trust Settlement	-	-	-	-	8	1	-	-	-	-
Health Insurance contributions (HB1)	-	-	-	-	-	-	196	209	256	356
Total Additions	**35,012**	**13,304**	**10,160**	**30,737**	**25,784**	**24,186**	**14,425**	**60,341**	**(1,434)**	**31,164**
Deductions										
Health Insurance Premiums	12,688	13,483	13,836	13,405	13,881	13,942	14,215	14,487	14,461	14,290
Administrative Expenses	58	65	89	66	62	69	71	71	73	74
Self-Funded Healthcare Costs	-	-	-	24	38	40	22	25	21	18
Excise Tax Insurance	-	-	-	-	-	-	-	-	-	-
Total Deductions	**12,745**	**13,548**	**13,925**	**13,495**	**13,981**	**14,051**	**14,308**	**14,583**	**14,555**	**14,382**
Net Increase (Decrease) in Fiduciary Net Position	**$22,267**	**$(244)**	**$(3,765)**	**$17,242**	**$11,803**	**$10,135**	**$117**	**$45,758**	**$(15,989)**	**$16,782**

The following tables include individuals receiving a monthly benefit as of June 30 in the indicated fiscal year. A single member may have multiple accounts which contribute to one pension. This table represents all individuals receiving a benefit including dependent children, Qualified Domestic Relations Order (QDRO) accounts and multiple beneficiary accounts. If a member has died or a disability decision is pending, the monthly benefit amount is reflected as zero until the account status changes.

Schedule of Benefit Expenses CERS Nonhazardous

As of June 30 (in Whole $)

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2014				
Average Benefit	$596	$1,042	$856	$613
Number of Accounts	11,885	34,911	4,729	1,110
Total Monthly Benefits	$7,081,048	$36,375,607	$4,047,035	$680,784
% of Total Monthly Benefits	14.70%	75.49%	8.40%	1.41%
Fiscal Year 2015				
Average Benefit	$612	$1,044	$862	$616
Number of Accounts	12,749	36,746	4,854	1,161
Total Monthly Benefits	$7,801,662	$38,375,001	$4,186,130	$715,032
% of Total Monthly Benefits	15.27%	75.13%	8.20%	1.40%
Fiscal Year 2016				
Average Benefit	$623	$1,045	$874	$626
Number of Accounts	14,014	39,066	5,118	1,268
Total Monthly Benefits	$8,724,563	$40,823,334	$4,472,723	$793,726
% of Total Monthly Benefits	15.92%	74.48%	8.16%	1.45%
Fiscal Year 2017				
Average Benefit	$634	$1,050	$883	$616
Number of Accounts	14,792	40,873	5,280	1,318
Total Monthly Benefits	$9,374,583	$42,912,604	$4,661,375	$811,542
% of Total Monthly Benefits	16.23%	74.29%	8.07%	1.41%
Fiscal Year 2018				
Average Benefit	$647	$1,062	$892	$645
Number of Accounts	15,713	42,918	5,425	1,359
Total Monthly Benefits	$10,169,605	$45,560,863	$4,838,284	$875,980
% of Total Monthly Benefits	16.55%	74.15%	7.87%	1.43%
Fiscal Year 2019				
Average Benefit	$668	$1,067	$901	$657
Number of Accounts	16,710	44,594	5,479	1,363
Total Monthly Benefits	$11,167,300	$47,580,052	$4,934,518	$895,303
% of Total Monthly Benefits	17.29%	73.68%	7.64%	1.39%
Fiscal Year 2020				
Average Benefit	$673	$1,070	$904	$667
Number of Accounts	17,378	45,973	5,405	1,370
Total Monthly Benefits	$11,693,581	$49,186,433	$4,888,554	$913,574
% of Total Monthly Benefits	17.54%	73.76%	7.33%	1.37%
Fiscal Year 2021				
Average Benefit	$684	$1,074	$909	$688
Number of Accounts	18,581	47,970	5,518	1,432
Total Monthly Benefits	$12,717,667	$51,532,707	$5,016,308	$984,964
% of Total Monthly Benefits	18.10%	73.35%	7.14%	1.40%
Fiscal Year 2022				
Average Benefit	$701	$1,082	$914	$723
Number of Accounts	19,172	49,431	5,444	1,470
Total Monthly Benefits	$13,435,298	$53,468,946	$4,977,131	$1,062,739
% of Total Monthly Benefits	18.42%	73.30%	6.82%	1.46%
Fiscal Year 2023				
Average Benefit	$717	$1,095	$920	$753
Number of Accounts	19,864	50,658	5,303	1,516
Total Monthly Benefits	$14,247,555	$55,453,257	$4,876,441	$1,141,532
% of Total Monthly Benefits	18.82%	73.23%	6.44%	1.51%

Schedule of Benefit Expenses - CERS Hazardous

As of June 30 (in Whole $)

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2014				
Average Benefit	$1,467	$2,437	$1,125	$1,008
Number of Accounts	1,974	4,873	695	119
Total Monthly Benefits	$2,895,353	$11,876,578	$781,685	$119,935
% of Total Monthly Benefits	18.47%	75.77%	4.99%	0.77%
Fiscal Year 2015				
Average Benefit	$1,480	$2,448	$1,145	$954
Number of Accounts	2,097	5,139	688	127
Total Monthly Benefits	$3,103,613	$12,581,191	$787,549	$121,103
% of Total Monthly Benefits	18.70%	75.82%	4.75%	0.73%
Fiscal Year 2016				
Average Benefit	$1,494	$2,453	$1,137	$975
Number of Accounts	2,269	5,485	742	143
Total Monthly Benefits	$3,388,890	$13,452,235	$843,463	$139,353
% of Total Monthly Benefits	19.01%	75.47%	4.73%	0.78%
Fiscal Year 2017				
Average Benefit	$1,509	$2,473	$1,138	$997
Number of Accounts	2,394	5,764	794	149
Total Monthly Benefits	$3,612,099	$14,255,349	$903,238	$148,515
% of Total Monthly Benefits	19.09%	75.35%	4.77%	0.78%
Fiscal Year 2018				
Average Benefit	$1,542	$2,505	$1,141	$1,110
Number of Accounts	2,540	6,189	811	158
Total Monthly Benefits	$3,917,668	$15,503,185	$925,221	$175,316
% of Total Monthly Benefits	19.09%	75.55%	4.51%	0.85%
Fiscal Year 2019				
Average Benefit	$1,546	$2,522	$1,163	$1,166
Number of Accounts	2,655	6,488	822	168
Total Monthly Benefits	$4,104,061	$16,365,945	$956,017	$195,932
% of Total Monthly Benefits	18.98%	75.69%	4.42%	0.91%
Fiscal Year 2020				
Average Benefit	$1,590	$2,554	$1,174	$1,205
Number of Accounts	2,771	6,864	814	169
Total Monthly Benefits	$4,406,958	$17,527,561	$955,266	$203,646
% of Total Monthly Benefits	19.08%	75.90%	4.14%	0.88%
Fiscal Year 2021				
Average Benefit	$1,615	$2,569	$1,169	$1,253
Number of Accounts	2,908	7,211	846	173
Total Monthly Benefits	$4,698,033	$18,522,964	$988,745	$216,818
% of Total Monthly Benefits	19.23%	75.83%	4.05%	0.89%
Fiscal Year 2022				
Average Benefit	$1,649	$2,586	$1,173	$1,329
Number of Accounts	2,979	7,494	858	182
Total Monthly Benefits	$4,910,951	$19,377,298	$1,006,030	$241,826
% of Total Monthly Benefits	19.23%	75.88%	3.94%	0.95%
Fiscal Year 2023				
Average Benefit	$1,690	$2,616	$1,196	$1,437
Number of Accounts	3,061	7,784	853	188
Total Monthly Benefits	$5,171,930	$20,360,195	$1,020,135	$270,089
% of Total Monthly Benefits	19.28%	75.91%	3.80%	1.01%

Schedule of Benefit Expenses - KERS Nonhazardous
As of June 30 (in Whole $)

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2014				
Average Benefit	$992	$1,911	$987	$886
Number of Accounts	6,678	33,106	2,706	954
Total Monthly Benefits	$6,624,472	$63,255,779	$2,671,749	$845,468
% of Total Monthly Benefits	9.03%	86.18%	3.64%	1.15%
Fiscal Year 2015				
Average Benefit	$992	$1,901	$996	$909
Number of Accounts	6,896	33,940	2,696	983
Total Monthly Benefits	$6,843,193	$64,503,048	$2,684,720	$893,407
% of Total Monthly Benefits	9.13%	86.09%	3.58%	1.19%
Fiscal Year 2016				
Average Benefit	$989	$1,886	$1,005	$902
Number of Accounts	7,390	35,192	2,770	1,014
Total Monthly Benefits	$7,312,293	$66,383,638	$2,784,928	$914,804
% of Total Monthly Benefits	9.45%	85.77%	3.60%	1.18%
Fiscal Year 2017				
Average Benefit	$992	$1,883	$1,013	$924
Number of Accounts	7,628	35,890	2,772	1,028
Total Monthly Benefits	$7,565,780	$67,591,003	$2,807,938	$950,318
% of Total Monthly Benefits	9.59%	85.65%	3.56%	1.20%
Fiscal Year 2018				
Average Benefit	$998	$1,879	$1,019	$940
Number of Accounts	8,070	37,141	2,767	1,007
Total Monthly Benefits	$8,049,794	$69,780,011	$2,818,593	$946,466
% of Total Monthly Benefits	9.87%	85.52%	3.45%	1.16%
Fiscal Year 2019				
Average Benefit	$993	$1,876	$1,029	$933
Number of Accounts	8,387	37,751	2,751	997
Total Monthly Benefits	$8,328,706	$70,826,696	$2,831,527	$930,110
% of Total Monthly Benefits	10.04%	85.42%	3.41%	1.12%
Fiscal Year 2020				
Average Benefit	$984	$1,872	$1,031	$937
Number of Accounts	8,622	38,233	2,676	987
Total Monthly Benefits	$8,483,484	$71,585,386	$2,759,983	$924,459
% of Total Monthly Benefits	10.13%	85.47%	3.30%	1.10%
Fiscal Year 2021				
Average Benefit	$984	$1,864	$1,036	$949
Number of Accounts	9,046	39,020	2,698	1,019
Total Monthly Benefits	$8,897,420	$72,724,923	$2,796,355	$966,951
% of Total Monthly Benefits	10.42%	85.17%	3.27%	1.13%
Fiscal Year 2022				
Average Benefit	$987	$1,860	$1,031	$966
Number of Accounts	9,279	39,508	2,609	1,033
Total Monthly Benefits	$9,155,941	$73,489,369	$2,690,544	$997,608
% of Total Monthly Benefits	10.61%	85.12%	3.12%	1.16%
Fiscal Year 2023				
Average Benefit	$982	$1,861	$1,034	$956
Number of Accounts	9,464	39,505	2,531	1,024
Total Monthly Benefits	$9,291,103	$73,531,803	$2,615,997	$979,166
% of Total Monthly Benefits	10.75%	85.09%	3.03%	1.13%

Schedule of Benefit Expenses - KERS Hazardous

As of June 30 (in Whole $)

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2014				
Average Benefit	$971	$1,560	$649	$749
Number of Accounts	1,851	1,497	191	89
Total Monthly Benefits	$1,797,900	$2,335,190	$123,867	$66,679
% of Total Monthly Benefits	41.58%	54.01%	2.86%	1.54%
Fiscal Year 2015				
Average Benefit	$986	$1,556	$661	$714
Number of Accounts	1,912	1,566	193	90
Total Monthly Benefits	$1,884,477	$2,436,923	$127,477	$64,250
% of Total Monthly Benefits	41.76%	54.00%	2.82%	1.42%
Fiscal Year 2016				
Average Benefit	$984	$1,542	$663	$730
Number of Accounts	2,046	1,658	194	94
Total Monthly Benefits	$2,011,530	$2,557,114	$128,663	$68,605
% of Total Monthly Benefits	42.21%	53.65%	2.70%	1.44%
Fiscal Year 2017				
Average Benefit	$993	$1,541	$662	$721
Number of Accounts	2,101	1,719	205	96
Total Monthly Benefits	$2,086,732	$2,648,685	$135,625	$69,255
% of Total Monthly Benefits	42.24%	53.61%	2.75%	1.40%
Fiscal Year 2018				
Average Benefit	$1,002	$1,551	$684	$737
Number of Accounts	2,215	1,877	205	100
Total Monthly Benefits	$2,218,520	$2,911,409	$140,174	$73,704
% of Total Monthly Benefits	41.52%	54.48%	2.62%	1.38%
Fiscal Year 2019				
Average Benefit	$1,020	$1,561	$708	$744
Number of Accounts	2,269	1,987	208	99
Total Monthly Benefits	$2,315,435	$3,101,783	$147,342	$73,702
% of Total Monthly Benefits	41.07%	55.01%	2.61%	1.31%
Fiscal Year 2020				
Average Benefit	$1,017	$1,561	$701	$739
Number of Accounts	2,334	2,061	207	94
Total Monthly Benefits	$2,374,412	$3,216,376	$145,112	$69,433
% of Total Monthly Benefits	40.90%	55.40%	2.50%	1.20%
Fiscal Year 2021				
Average Benefit	$1,021	$1,551	$701	$751
Number of Accounts	2,414	2,164	215	97
Total Monthly Benefits	$2,464,831	$3,355,473	$150,742	$72,837
% of Total Monthly Benefits	40.78%	55.52%	2.49%	1.21%
Fiscal Year 2022				
Average Benefit	$1,032	$1,560	$711	$786
Number of Accounts	2,434	2,267	216	96
Total Monthly Benefits	$2,512,089	$3,536,881	$153,476	$75,437
% of Total Monthly Benefits	40.01%	56.34%	2.44%	1.20%
Fiscal Year 2023				
Average Benefit	$1,040	$1,565	$703	$843
Number of Accounts	2,441	2,296	213	98
Total Monthly Benefits	$2,538,237	$3,592,494	$149,801	$82,626
% of Total Monthly Benefits	39.89%	56.46%	2.35%	1.30%

Schedule of Benefit Expenses - SPRS

As of June 30 (in Whole $)

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2014				
Average Benefit	$3,621	$3,197	$1,346	$2,196
Number of Accounts	146	1,172	75	23
Total Monthly Benefits	$528,611	$3,747,012	$100,974	$49,197
% of Total Monthly Benefits	11.94%	84.66%	2.28%	1.11%
Fiscal Year 2015				
Average Benefit	$3,578	$3,189	$1,347	$2,153
Number of Accounts	150	1,213	75	23
Total Monthly Benefits	$536,649	$3,867,971	$101,018	$49,524
% of Total Monthly Benefits	11.78%	84.91%	2.22%	1.09%
Fiscal Year 2016				
Average Benefit	$3,579	$3,135	$1,269	$2,008
Number of Accounts	155	1,277	82	25
Total Monthly Benefits	$554,743	$4,002,993	$104,056	$50,196
% of Total Monthly Benefits	11.77%	84.95%	2.21%	1.07%
Fiscal Year 2017				
Average Benefit	$3,611	$3,135	$1,278	$2,008
Number of Accounts	149	1,303	82	25
Total Monthly Benefits	$538,032	$4,084,771	$104,788	$50,196
% of Total Monthly Benefits	11.26%	85.50%	2.19%	1.05%
Fiscal Year 2018				
Average Benefit	$3,642	$3,128	$1,289	$2,082
Number of Accounts	153	1,361	83	26
Total Monthly Benefits	$557,249	$4,257,579	$107,019	$54,127
% of Total Monthly Benefits	11.20%	85.56%	2.15%	1.09%
Fiscal Year 2019				
Average Benefit	$3,607	$3,138	$1,298	$2,082
Number of Accounts	156	1,401	83	26
Total Monthly Benefits	$562,630	$4,395,857	$107,737	$54,127
% of Total Monthly Benefits	10.99%	85.85%	2.10%	1.06%
Fiscal Year 2020				
Average Benefit	$3,628	$3,154	$1,339	$2,137
Number of Accounts	152	1,440	80	26
Total Monthly Benefits	$551,470	$4,541,490	$107,148	$55,558
% of Total Monthly Benefits	10.49%	86.41%	2.04%	1.06%
Fiscal Year 2021				
Average Benefit	$3,542	$3,160	$1,287	$2,137
Number of Accounts	156	1,468	84	26
Total Monthly Benefits	$552,551	$4,638,826	$108,101	$55,558
% of Total Monthly Benefits	10.32%	86.63%	2.02%	1.04%
Fiscal Year 2022				
Average Benefit	$3,565	$3,163	$1,275	$2,077
Number of Accounts	159	1,481	83	25
Total Monthly Benefits	$566,764	$4,683,959	$105,787	$51,931
% of Total Monthly Benefits	10.48%	86.60%	1.96%	0.96%
Fiscal Year 2023				
Average Benefit	$3,550	$3,146	$1,294	$2,077
Number of Accounts	155	1,486	83	25
Total Monthly Benefits	$550,304	$4,674,802	$107,386	$51,931
% of Total Monthly Benefits	10.22%	86.82%	1.99%	0.97%

Active Refunds Report For the Period ended June 30, 2023 (in Whole $)							
		Active Termination Refunds		Active Death Refunds		Totals	
		Number of Refunds	Amount of Refunds	Number of Refunds	Amount of Refunds	Number of Refunds	Amount of Refunds
System	Tier						
CERS Nonhazardous	1	276	$3,642,939	169	$338,656	445	$3,981,595
	2	457	6,452,888	51	156,026	508	6,608,914
	3	1,849	12,368,533	92	282,340	1,941	12,650,873
	Total	**2,582**	**22,464,360**	**312**	**777,022**	**2,894**	**23,241,382**
CERS Hazardous	1	21	620,357	1	616	22	620,973
	2	40	2,277,137	-	-	40	2,277,137
	3	174	3,316,045	-	-	174	3,316,045
	Total	**235**	**6,213,539**	**1**	**616**	**236**	**6,214,155**
KERS Nonhazardous	1	168	2,334,981	98	184,293	266	2,519,274
	2	203	3,488,346	16	79,384	219	3,567,730
	3	626	5,285,615	22	59,301	648	5,344,916
	Total	**997**	**11,108,942**	**136**	**322,978**	**1,133**	**11,431,920**
KERS Hazardous	1	8	184,704	5	12,303	13	197,007
	2	38	933,351	2	7,316	40	940,667
	3	205	2,771,039	3	24,561	208	2,795,600
	Total	**251**	**3,889,094**	**10**	**44,180**	**261**	**3,933,274**
SPRS	1	2	46,983	-	-	2	46,983
	2	2	103,622	-	-	2	103,622
	3	3	618	-	-	3	618
	Total	**7**	**151,223**	**-**	**-**	**7**	**151,223**
TOTALS		**4,072**	**$43,827,158**	**459**	**$1,144,796**	**4,531**	**$44,971,954**

Analysis of Initial Retirees As of June 30 (in Whole $)	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
Fiscal Year 2014					
Number of Accounts	3,529	430	2,037	245	77
Average Service Credit (months)	182	194	202	165	260
Average Final Compensation	$33,816	$57,718	$46,480	$46,595	$70,009
Average Monthly Benefit	$879	$2,021	$1,278	$1,296	$3,322
Average System Payment for Health Insurance	$486	$1,279	$534	$937	$1,378
Fiscal Year 2015					
Number of Accounts	4,084	496	2,078	191	55
Average Service Credit (months)	188	204	204	164	251
Average Final Compensation	$34,561	$59,589	$47,187	$47,148	$67,862
Average Monthly Benefit	$913	$2,178	$1,308	$1,280	$3,009
Average System Payment for Health Insurance	$489	$1,254	$549	$906	$1,376
Fiscal Year 2016					
Number of Accounts	4,151	522	2,043	205	57
Average Service Credit (months)	190	212	207	160	234
Average Final Compensation	$34,632	$58,977	$47,429	$44,494	$65,535
Average Monthly Benefit	$932	$2,303	$1,351	$1,225	$2,953
Average System Payment for Health Insurance	$501	$1,277	$558	$870	$1,425
Fiscal Year 2017					
Number of Accounts	4,151	544	2,094	191	30
Average Service Credit (months)	191	203	208	146	241
Average Final Compensation	$34,779	$58,384	$46,753	$47,604	$68,401
Average Monthly Benefit	$940	$2,236	$1,339	$1,150	$2,935
Average System Payment for Health Insurance	$510	$1,247	$558	$872	$1,192
Fiscal Year 2018					
Number of Accounts	4,570	696	2,682	328	68
Average Service Credit (months)	195	211	223	167	241
Average Final Compensation	$37,683	$65,407	$48,552	$51,219	$71,132
Average Monthly Benefit	$1,027	$2,528	$1,481	$1,392	$3,035
Average System Payment for Health Insurance	$531	$1,300	$578	$1,033	$1,365
Fiscal Year 2019					
Number of Accounts	4,283	541	1,993	234	63
Average Service Credit (months)	193	198	204	174	254
Average Final Compensation	$37,412	$64,646	$47,824	$51,901	$73,795
Average Monthly Benefit	$997	$2,366	$1,355	$1,532	$3,341
Average System Payment for Health Insurance	$513	$1,231	$569	$1,015	$1,391
Fiscal Year 2020					
Number of Accounts	3,584	580	1,755	195	54
Average Service Credit (months)	189	221	211	150	245
Average Final Compensation	$36,968	$67,994	$47,069	$51,021	$78,468
Average Monthly Benefit	$935	$2,715	$1,352	$1,242	$3,313
Average System Payment for Health Insurance	$539	$1,361	$579	$1,013	$1,404
Fiscal Year 2021					
Number of Accounts	3,967	531	1,644	201	32
Average Service Credit (months)	194	209	201	143	217
Average Final Compensation	$38,245	$68,216	$46,600	$49,664	$72,942
Average Monthly Benefit	$987	$2,589	$1,276	$1,248	$2,872
Average System Payment for Health Insurance	$543	$1,326	$560	$1,019	$1,347

Analysis of Initial Retirees As of June 30 (in Whole $) Continued	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
Fiscal Year 2022					
Number of Accounts	3,975	496	1,910	221	46
Average Service Credit (months)	198	205	213	165	245
Average Final Compensation	$39,244	$70,218	$48,028	$52,575	$76,377
Average Monthly Benefit	$1,048	$2,691	$1,389	$1,515	$3,287
Average System Payment for Health Insurance	$576	$1,336	$599	$1,020	$1,345
Fiscal Year 2023					
Number of Accounts	4,003	498	1,479	136	13
Average Service Credit (months)	194	216	190	146	186
Average Final Compensation	$41,262	$77,761	$50,304	$52,473	$73,081
Average Monthly Benefit	$1,101	$3,029	$1,332	$1,315	$2,737
Average System Payment for Health Insurance	$625	$1,503	$640	$1,151	$1,208

Note: This table represents all individuals who had an initial retirement date within the fiscal year.

Payment Options Selected by Retired Members As of June 30, 2023 (in Whole $)	Basic	Other	Period Certain	Pop Up	Social Security Adjustment	Survivorship	Annuity
CERS Nonhazardous							
Number of Accounts	33,185	26	11,314	12,064	2,289	18,398	65
Monthly Benefits	$27,776,553	$46,638	$10,388,401	$15,144,926	$3,131,754	$19,222,394	$8,119
CERS Hazardous							
Number of Accounts	1,976	36	1,112	4,658	600	3,504	-
Monthly Benefits	$3,911,427	$60,706	$2,321,508	$11,979,911	$1,020,349	$7,528,447	$-
KERS Nonhazardous							
Number of Accounts	19,393	23	6,715	10,163	3,243	12,971	16
Monthly Benefits	$28,657,458	$45,511	$10,289,411	$20,547,866	$5,618,055	$21,255,419	$4,349
KERS Hazardous							
Number of Accounts	1,414	6	553	1,402	318	1,350	5
Monthly Benefits	$1,573,156	$5,498	$695,779	$2,105,151	$352,552	$1,629,635	$1,387
SPRS							
Number of Accounts	189	1	132	754	182	491	-
Monthly Benefits	$545,008	$3,084	$383,635	$2,588,617	$364,615	$1,499,465	$-
KPPA Total							
Number of Accounts	56,157	92	19,826	29,041	6,632	36,714	86
Monthly Benefits	$62,463,602	$161,437	$24,078,734	$52,366,471	$10,487,325	$51,135,360	$13,855

The information in this table represents accounts administered by KPPA. A single member may have multiple accounts, which contribute to one pension.

Employer Contribution Rates

In CERS, KERS, and SPRS, both the employee and the employer contribute a percentage of creditable compensation to KPPA.

The employee contribution rate is set by state statute. Nonhazardous employees contribute 5% while Hazardous duty members contribute 8%. Employees hired on or after September 1, 2008, contribute an additional 1% to health insurance.

CERS employer contribution rates are set by the CERS Board under Kentucky Revised Statutes 78.635 based on an annual actuarial valuation, unless altered by legislation enacted by the Kentucky General Assembly. The CERS employer contribution rates for fiscal year 2008 through 2009 were reduced from the actuarially recommended rate as a result of the passage of House Bill (HB) 1 during the 2008 Extraordinary Session of the Kentucky General Assembly. Also, during its 2009 Regular Session, the Kentucky General Assembly enacted HB 117, which mandated an extension of the phase-in of insurance contribution rates that had been previously approved by the KPPA Board in 2006 from five years to 10 years to further mitigate the impact of the application of GASB Statements 43 and 45 on CERS employer contribution rates for health insurance. During the 2018 Regular Session of the Kentucky General Assembly, HB 362 capped CERS employer contribution rate increases to no more than 12% per year over the prior fiscal year for the period of July 1, 2018 to June 30, 2028, or until the actuarial recommended contribution was met. Fiscal year 2022 was the last year for the 12% cap for CERS. The actual pension and insurance employer contribution rates that were paid are shown below.

Under Kentucky Revised Statutes 61.565, KERS and SPRS employer contribution rates are set by the KRS Board based on an annual actuarial valuation. However, KERS and SPRS employer rates are subject to approval by the Kentucky General Assembly through the adoption of the biennial Executive Branch Budget. For fiscal years 2003 through 2014, the Kentucky General Assembly suspended Kentucky Revised Statutes 61.565 in the budget in order to provide an employer contribution rate that is less than the amount recommended by the Board's consulting actuary. For fiscal years 2018 thru 2021, the legislature amended the KERS Nonhazardous rate for quasi-government agencies to 49.47%. The table in the Actuarial Section shows the KERS and SPRS employer contribution rates that were actuarial recommended rates in the annual valuation without any adjustments. House Bill 8 passed during the 2021 legislative session changed how employer contributions are allocated and collected from the participating employers in the KERS Nonhazardous Fund. Each employer will pay a normal cost contribution on the payroll of their covered employees and contribute to the fund an allocated share of the cost required to amortize the unfunded liability.

Employer Contribution Rates (%) As of June 30

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
CERS Nonhazardous										
Actual Rate	18.89%	17.67%	17.06%	18.68%	19.18%	21.48%	24.06%	24.06%	26.95%	26.79%
CERS Hazardous										
Actual Rate	35.70%	34.31%	32.95%	31.06%	31.55%	35.34%	39.58%	39.58%	44.33%	49.59%
KERS Nonhazardous*										
Actual Rate	26.79%	38.77%	38.77%	48.59%	49.47%	83.43%	83.43%	84.43%	10.10%	9.97%
KERS Hazardous										
Actual Rate	32.21%	26.34%	26.34%	23.82%	23.70%	36.85%	36.85%	36.00%	33.43%	31.82%
SPRS										
Actual Rate	71.15%	75.76%	75.76%	89.21%	91.24%	146.28%	146.28%	143.48%	146.06%	99.43%

**2021 House Bill 8 changed the manner in which KERS Nonhazardous pays employer contributions. Beginning in FY22, each employer pays the normal cost, which is the rate stated above, along with an actuarial accrued liability payment that is calculated and provided by the actuary.*

Insurance Contracts

KPPA provides medical insurance and other managed care coverage for eligible retired members.

Participation in the insurance program is optional and requires the completion of the proper forms at the time of retirement in order to obtain the insurance coverage. KPPA provides access to health insurance coverage through the Kentucky Employees' Health Plan (KEHP) for recipients until they reach age 65 and/or become Medicare eligible. After a retired member becomes eligible for Medicare, coverage is available through a Medicare eligible plan offered by KPPA. A retired member's spouse and/or dependents may also be covered on health insurance through KPPA.

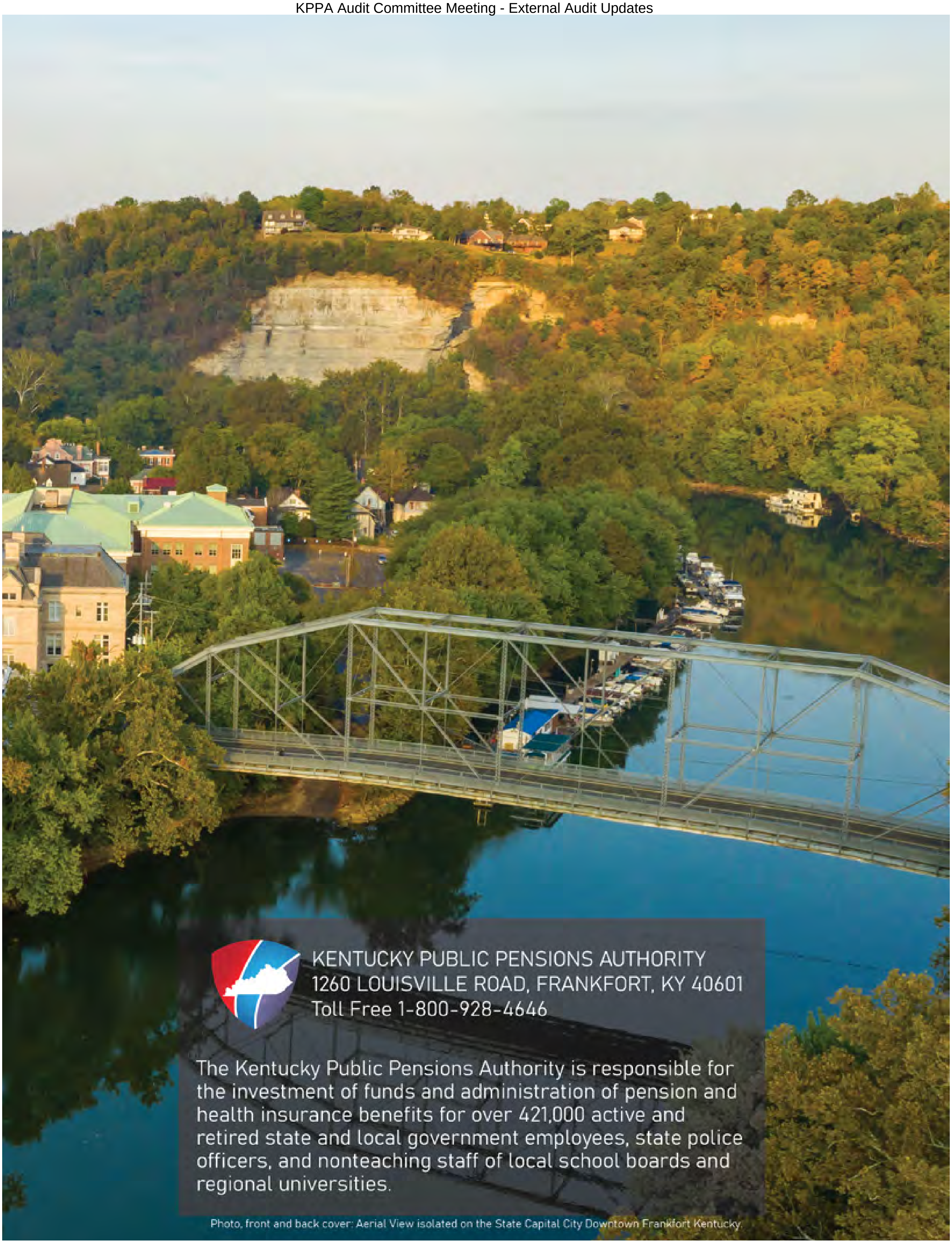
Insurance Benefits Paid to Retirees & Beneficiaries
Participating in a KPPA Health Insurance Plan As of June 30, 2023 (in Whole $)

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
Number	40,942	10,024	31,612	3,109	1,795
Average Service Credit (Months)	267	277	312	264	320
Average Monthly System Payment for Health Insurance	$349	$1,051	$370	$732	$956
Average Monthly Member Payment for Health Insurance	$55	$42	$55	$45	$25
Total Monthly Payment for Health Insurance	$15,657,298	$8,954,858	$12,613,727	$1,985,695	$1,357,854

Insurance Contracts by Type As of June 30

CERS Nonhazardous	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
KEHP Parent Plus	278	242	235	222	231	214	210	218	225	234
KEHP Couple/Family	546	473	465	462	510	530	519	508	543	524
KEHP Single	7,843	8,098	8,164	8,313	8,802	8,912	8,751	8,685	8,692	8,721
Medicare without Prescription	2,583	2,531	2,499	2,462	2,389	2,278	2,183	2,081	1,958	1,921
Medicare with Prescription	20,200	21,520	23,007	24,247	25,476	26,848	27,786	28,472	29,001	29,542
CERS Hazardous	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
KEHP Parent Plus	432	456	378	395	422	430	425	473	468	491
KEHP Couple/Family	2,184	2,255	2,321	2,387	2,571	2,648	2,816	2,894	2,961	3,047
KEHP Single	1,447	1,500	1,595	1,645	1,712	1,746	1,731	1,768	1,810	1,893
Medicare without Prescription	89	107	114	125	119	121	116	120	134	138
Medicare with Prescription	2,510	2,697	2,969	3,205	3,388	3,658	3,911	4,103	4,284	4,455
KERS Nonhazardous	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
KEHP Parent Plus	506	452	441	411	460	441	433	428	434	433
KEHP Couple/Family	797	714	656	663	696	700	666	633	612	553
KEHP Single	9,491	9,251	8,876	8,627	8,638	8,304	7,942	7,415	7,141	6,693
Medicare without Prescription	1,370	1,303	1,286	1,229	1,179	1,141	1,089	1,026	989	957
Medicare with Prescription	17,738	18,577	19,447	20,215	21,117	21,713	22,271	22,648	22,903	22,976
KERS Hazardous	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
KEHP Parent Plus	110	110	97	88	96	103	112	104	116	118
KEHP Couple/Family	448	448	439	432	478	493	491	491	477	470
KEHP Single	647	656	663	667	686	699	677	667	686	653
Medicare without Prescription	56	62	66	72	73	83	82	82	84	72
Medicare with Prescription	1,104	1,177	1,302	1,401	1,495	1,584	1,662	1,693	1,746	1,796
SPRS	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
KEHP Parent Plus	78	81	77	79	74	77	85	89	90	92
KEHP Couple/Family	444	441	447	420	426	454	459	448	454	434
KEHP Single	263	265	246	251	253	224	226	221	217	230
Medicare without Prescription	20	16	18	17	21	16	16	13	14	17
Medicare with Prescription	712	777	850	897	941	975	998	1,003	1,016	1,022
KPPA Total	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
KEHP Parent Plus	1,404	1,341	1,228	1,195	1,283	1,265	1,265	1,312	1,333	1,368
KEHP Couple/Family	4,419	4,331	4,328	4,364	4,681	4,825	4,951	4,974	5,047	5,028
KEHP Single	19,691	19,770	19,544	19,503	20,091	19,885	19,327	18,756	18,546	18,190
Medicare without Prescription	4,118	4,019	3,983	3,905	3,781	3,639	3,486	3,322	3,179	3,105
Medicare with Prescription	42,264	44,748	47,575	49,965	52,417	54,778	56,628	57,919	58,950	59,791

Acronym Glossary for Kentucky Retirement Systems As of December 6, 2023	
Phrase	**Acronym**
Actuarially Determined Contribution	ADC
Annual Required Contribution	ARC
Annual Comprehensive Financial Report	ACFR
Board of Trustees	Board
Collateralized Mortgage Obligations	CMO
Commonwealth of Kentucky	Commonwealth
Consumer Price Index	CPI
Department of Employee Insurance	DEI
Emerging Market Debt	EMD
Executive Order	EO
Exchange Traded Funds	ETFs
Fiscal Year	FY
Generally Accepted Accounting Principles	GAAP
Governmental Accounting Standards Board	GASB
Gabriel, Roeder, Smith & Co.	GRS
House Bill	HB
Investment Management Agreement	IMA
Investment Policy Statement	IPS
Internal Revenue Service	IRS
Information Technology	IT
Kentucky Administrative Regulations	KAR
Kentucky Employees' Health Plan	KEHP
Kentucky Public Pensions Authority	KPPA
Kohlberg, Kravis, Roberts	KKR
Kentucky Retirement Systems	KRS
Net Asset Value	NAV
Net OPEB Liability	NOL
Net Pension Liability	NPL
Not Rated	NR
Other post-employment benefits	OPEB
Pacific Alternative Asset Management Company	PAAMCO
Perimeter Park West Incorporated	PPW
Qualified Domestic Relations Order	QDRO
Required Supplementary Information	RSI
Senate Bill	SB
Senate Resolution	SR
Strategic Technology Advancements for the Retirement of Tomorrow	START
Short Term Investment Funds	STIFs
Total Pension Liability	TPL
Teachers' Retirement System	TRS
Unfunded Actuarial Accrued Liability	UAAL
Unfunded Accrued Liability	UAL
Unrelated Business Income	UBI



KENTUCKY PUBLIC PENSIONS AUTHORITY
1260 LOUISVILLE ROAD, FRANKFORT, KY 40601
Toll Free 1-800-928-4646

The Kentucky Public Pensions Authority is responsible for the investment of funds and administration of pension and health insurance benefits for over 421,000 active and retired state and local government employees, state police officers, and nonteaching staff of local school boards and regional universities.

Photo, front and back cover: Aerial View isolated on the State Capital City Downtown Frankfort Kentucky.

County Employees Retirement System

GASB No. 67 Accounting Valuation Report
As of June 30, 2023

P: 469.524.0000 | www.grsconsulting.com

November 9, 2023

Board of Trustees
County Employees Retirement System
Perimeter Park West
1260 Louisville Road
Frankfort, KY 40601

Re: GASB 67 Reporting – Actuarial Information – County Employees Retirement System

Dear Members of the Board:

This report provided herein contains certain information for the **County Employees Retirement System (CERS)** in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67, "Financial Reporting for Pension Plans" for the fiscal year ending June 30, 2023. A separate report will be provided at a later date with additional accounting information determined in accordance with GASB Statement No. 68, "Accounting and Financial Reporting for Pensions".

The liability calculations presented in this report were performed for the purpose of satisfying the requirements of GASB No. 67 and are not applicable for other purposes, such as determining the plan's funding requirements. The plan's liability for other purposes may produce significantly different results. This report may be provided to parties other than the Board of Trustees of the County Employees Retirement System only in its entirety and only with the permission of the Board.

The total pension liability, net pension liability, and sensitivity information shown in this report are based on an actuarial valuation date of June 30, 2022. The total pension liability was rolled-forward from the valuation date to the plan's fiscal year ending June 30, 2023 using generally accepted actuarial principles. GASB 67 requires the disclosure of a 10-year history of certain information in the Required Supplementary Information within the annual financial report. Information disclosed for years prior to June 30, 2017 were prepared by the prior actuary.

Actuarial Assumptions

The Board of Trustees adopted new actuarial assumptions on May 9, 2023. These assumptions are documented in the report titled "2022 Actuarial Experience Study for the Period Ending June 30, 2022", and include a change in the investment return assumption from 6.25% to 6.50%. The Total Pension Liability as of June 30, 2023 is determined using these updated assumptions.

Plan Provisions

House Bill 506 passed during the 2023 legislative session and reinstated the Partial Lump-Sum Optional Form of payment for members who retire on and after January 1, 2024, with the lump-sum payment options expanded to include to 48 or 60 times the member's monthly retirement allowance.

5605 North MacArthur Boulevard | Suite 870 | Irving, Texas 75038-2631

Since this optional form of payment results in a reduced, actuarial equivalent, monthly retirement allowance for members who elect a partial lump-sum option, this provision does not have a fiscal impact to the total pension liability.

House Bill 506 also adjusted the minimum required separation period before a retiree may become reemployed and continue to receive their retirement allowance to one month for all circumstances for each plan. This is a minimal change for members in the hazardous plan, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe this provision in House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members and therefore have reflected no fiscal impact to the total pension liability of the hazardous plan.

Similarly, this is a relatively small change for future retirees in the non-hazardous plan. But as the minimum separation period was previously three months in almost every circumstance, we have assumed that there would be a 1.0% increase in the rate of retirement for each of the first two years a non-hazardous member becomes retirement eligible under the age of 65, in order to reflect a shift in the retirement pattern. The total pension liability as of June 30, 2023 for the non-hazardous plan is determined using these updated benefit provisions.

There have been no other plan provision changes that would materially impact the total pension liability since June 30, 2022. It is our opinion that these procedures for determining the information contained in these reports are reasonable, appropriate, and comply with applicable requirements under GASB No. 67.

Single Discount Rate

A single discount rate of 6.50% for the non-hazardous and hazardous plans was used to measure the total pension liability for the fiscal year ending June 30, 2023. This single discount rate was based on the expected rate of return on pension plan investments for each plan. Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the pension plan’s fiduciary net position and future contributions were projected to be sufficient to finance all the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of the projected benefit payments to determine the total pension liability for each plan.

The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Except where noted below, future contributions are projected assuming that the entire actuarially determined employer contribution is received by each plan each future year, calculated in accordance with the current funding policy. The assumed future employer contributions reflect the provisions of House Bill 362 (passed during the 2018 legislative session) which limit the increases to the employer contribution rates to 12% over the prior fiscal year through June 30, 2028.

401(h) Subaccount

Based on guidance issued by GASB in connection with GASB Statement No. 74, the 1% of pay member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered an OPEB asset. As a result, the reported fiduciary net positions as of June 30, 2017 and later are net of the 401(h) asset balance.

Board of Trustees
November 9, 2023
Page 3

Additional Disclosures

This report is based upon information, furnished to us by the Kentucky Public Pensions Authority (KPPA), which includes benefit provisions, membership information, and financial data. We did not audit this data and information, but we did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KPPA. Please see the "Actuarial Valuation Report as of June 30, 2022" and the "2022 Actuarial Experience Study for the Period Ending June 30, 2022" for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for the fiscal year ending June 30, 2023.

To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All three of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

Gabriel Roeder Smith & Co.

Daniel J. White

Daniel J. White, FSA, EA, MAAA
Senior Consultant and Actuary

Janie Shaw

Janie Shaw, ASA, EA, MAAA
Consultant and Actuary

Krysti Kiesel

Krysti Kiesel, ASA, MAAA
Consultant and Actuary

Table of Contents

SECTION 1

EXHIBIT 1a

Schedule of the Employers' Net Pension Liability – CERS Non-Hazardous Plan

($ in thousands)

Fiscal Year Ending June 30, (1)	Total Pension Liability (2)	Plan Fiduciary Net Position (3)	Employers' Net Pension Liability (Asset) (4) = (2) - (3)	Plan Fiduciary Net Position as a Percentage of the Total Pension Liability (5) = (3) / (2)	Covered Employee Payroll[1] (6)	Net Pension Liability as a Percentage of Covered Employee Payroll (7) = (4) / (6)
2023	$ 15,089,106	$ 8,672,597	$ 6,416,509	57.48%	$ 2,966,567	216.29%
2022	15,192,599	7,963,586	7,229,013	52.42%	2,835,173	254.98%
2021	14,941,437	8,565,652	6,375,785	57.33%	2,446,612	260.60%
2020	14,697,244	7,027,327	7,669,917	47.81%	2,462,752	311.44%
2019	14,192,966	7,159,921	7,033,045	50.45%	2,424,796	290.05%
2018	13,109,268	7,018,963	6,090,305	53.54%	2,454,927	248.08%
2017	12,540,545	6,687,237	5,853,308	53.32%	2,376,290	246.32%
2016	11,065,013	6,141,395	4,923,618	55.50%	2,417,187	203.69%
2015	10,740,325	6,440,800	4,299,525	59.97%	2,296,716	187.20%
2014	9,772,522	6,528,146	3,244,376	66.80%	2,272,270	142.78%

Note:

[1] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

EXHIBIT 1b

Schedule of the Employers’ Net Pension Liability – CERS Hazardous Plan

($ in thousands)

Fiscal Year Ending June 30, (1)	Total Pension Liability (2)	Plan Fiduciary Net Position (3)	Employers' Net Pension Liability (Asset) (4) = (2) - (3)	Plan Fiduciary Net Position as a Percentage of the Total Pension Liability (5) = (3) / (2)	Covered Employee Payroll[1] (6)	Net Pension Liability as a Percentage of Covered Employee Payroll (7) = (4) / (6)
2023	$ 5,731,148	$ 3,035,192	$ 2,695,956	52.96%	$ 714,837	377.14%
2022	5,769,691	2,718,234	3,051,457	47.11%	666,346	457.94%
2021	5,576,567	2,914,408	2,662,159	52.26%	572,484	465.02%
2020	5,394,732	2,379,704	3,015,028	44.11%	559,551	538.83%
2019	5,176,003	2,413,708	2,762,295	46.63%	553,541	499.02%
2018	4,766,794	2,348,337	2,418,457	49.26%	562,853	429.68%
2017	4,455,275	2,217,996	2,237,279	49.78%	526,559	424.89%
2016	3,726,115	2,010,174	1,715,941	53.95%	526,334	326.02%
2015	3,613,308	2,078,202	1,535,106	57.52%	483,641	317.41%
2014	3,288,826	2,087,002	1,201,824	63.46%	479,164	250.82%

Note:

[1] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

EXHIBIT 2a

Schedule of the Employers' Net Pension Liability – CERS Non-Hazardous Plan

($ in thousands)

Change in the Net Pension Liability	**2023**	**2022**	**2021**	**2020**	**2019**	**2018**	**2017**	**2016**	**2015**	**2014**
Total pension liability										
Service Cost	$ 283,633	$ 272,250	$ 280,165	$ 280,092	$ 254,643	$ 254,169	$ 193,082	$ 209,101	$ 207,400	$ 192,482
Interest	920,862	906,401	892,309	861,720	794,935	760,622	803,555	780,587	733,002	710,526
Benefit Changes	3,862	0	4,106	0	0	15,708	0	0	0	0
Difference between actual and expected experience	511,721	(49,439)	(91,776)	173,345	87,377	279,401	(208,015)	0	49,966	0
Assumption Changes	(905,957)	0	0	0	727,351	0	1,388,800	0	606,293	0
Benefit Payments	(917,614)	(878,050)	(840,611)	(810,879)	(780,608)	(741,177)	(701,891)	(665,000)	(628,858)	(597,136)
Net Change in Total Pension Liability	$ (103,493)	$ 251,162	$ 244,193	$ 504,278	$ 1,083,698	$ 568,723	$ 1,475,532	$ 324,687	$ 967,803	$ 305,872
Total Pension Liability - Beginning	**$ 15,192,599**	**$ 14,941,437**	**$ 14,697,244**	**$ 14,192,966**	**$ 13,109,268**	**$ 12,540,545**	**$ 11,065,013**	**$ 10,740,325**	**$ 9,772,522**	**$ 9,466,650**
Total Pension Liability - Ending (a)	**$ 15,089,106**	**$ 15,192,599**	**$ 14,941,437**	**$ 14,697,244**	**$ 14,192,966**	**$ 13,109,268**	**$ 12,540,545**	**$ 11,065,013**	**$ 10,740,325**	**$ 9,772,522**
Plan Fiduciary Net Position[1]										
Contributions - Employer	$ 697,681	$ 606,807	$ 472,228	$ 475,416	$ 393,453	$ 358,017	$ 333,554	$ 284,105	$ 298,565	$ 324,231
Contributions - Member[2]	147,769	186,648	165,698	168,994	159,064	160,370	150,715	141,674	140,311	128,568
Refunds of contributions to members	(23,263)	(19,789)	(13,862)	(14,918)	(14,387)	(14,608)	(14,430)	(13,753)	(13,523)	(14,286)
Retirement benefits	(894,351)	(858,261)	(826,749)	(795,960)	(766,221)	(726,569)	(687,461)	(651,246)	(615,335)	(582,850)
Net Investment Income[2]	805,303	(494,801)	1,762,739	56,178	390,664	573,829	825,900	(40,800)	110,568	895,530
Administrative Expense	(24,128)	(22,670)	(21,729)	(22,304)	(21,659)	(19,592)	(19,609)	(19,385)	(18,212)	(18,615)
Other	0	0	0	0	44 [5]	361 [5]	(42,827) [4]	0	10,280	0
Net Change in Plan Fiduciary Net Position	$ 709,011	$ (602,066)	$ 1,538,325	$ (132,594)	$ 140,958	$ 331,808	$ 545,843	$ (299,405)	$ (87,346)	$ 732,578
Plan Fiduciary Net Position - Beginning	**$ 7,963,586**	**$ 8,565,652**	**$ 7,027,327**	**$ 7,159,921**	**$ 7,018,963**	**$ 6,687,237**	**$ 6,141,395**	**$ 6,440,800**	**$ 6,528,146**	**$ 5,795,568**
Prior Year Adjustment	0	0	0	0	0	(82)	0	0	0	0
Plan Fiduciary Net Position - Ending (b)	**$ 8,672,597**	**$ 7,963,586**	**$ 8,565,652**	**$ 7,027,327**	**$ 7,159,921**	**$ 7,018,963**	**$ 6,687,237**	**$ 6,141,395**	**$ 6,440,800**	**$ 6,528,146**
Net Pension Liability - Ending (a) - (b)	**$ 6,416,509**	**$ 7,229,013**	**$ 6,375,785**	**$ 7,669,917**	**$ 7,033,045**	**$ 6,090,305**	**$ 5,853,308**	**$ 4,923,618**	**$ 4,299,525**	**$ 3,244,376**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	57.48%	52.42%	57.33%	47.81%	50.45%	53.54%	53.32%	55.50%	59.97%	66.80%
Covered Employee Payroll[3]	$ 2,966,567	$ 2,835,173	$ 2,446,612	$ 2,462,752	$ 2,424,796	$ 2,454,927	$ 2,376,290	$ 2,417,187	$ 2,296,716	$ 2,272,270
Net Pension Liability as a Percentage of Covered Employee Payroll	216.29%	254.98%	260.60%	311.44%	290.05%	248.08%	246.32%	203.69%	187.20%	142.78%

Notes:

[1] Does not include 401(h) assets for fiscal years 2017 and later. 401(h) assets totaled $108,843,000 as of June 30, 2023

[2] Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later
For fiscal year 2023, 401(h) contributions equaled -$30,000; and associated investment return equaled $10,113,000

[3] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later

[4] Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later

[5] Northern Trust Settlement

EXHIBIT 2b

Schedule of the Employers’ Net Pension Liability – CERS Hazardous Plan

($ in thousands)

Change in the Net Pension Liability	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total pension liability										
Service Cost	$ 115,389	$ 109,683	$ 109,350	$ 109,887	$ 77,426	$ 81,103	$ 58,343	$ 66,249	$ 71,934	$ 66,761
Interest	350,413	338,799	327,963	314,762	289,741	270,694	270,860	262,886	247,008	238,665
Benefit Changes	0	0	333	0	0	2,172	0	0	0	0
Difference between actual and expected experience	97,750	56,197	38,850	73,696	27,364	205,882	92,588	0	41,935	0
Assumption Changes	(275,934)	0	0	0	276,541	0	536,667	0	166,849	0
Benefit Payments	(326,161)	(311,555)	(294,661)	(279,616)	(261,863)	(248,332)	(229,299)	(216,327)	(203,244)	(192,299)
Net Change in Total Pension Liability	$ (38,543)	$ 193,124	$ 181,835	$ 218,729	$ 409,209	$ 311,519	$ 729,159	$ 112,807	$ 324,482	$ 113,127
Total Pension Liability - Beginning	**$ 5,769,691**	**$ 5,576,567**	**$ 5,394,732**	**$ 5,176,003**	**$ 4,766,794**	**$ 4,455,275**	**$ 3,726,115**	**$ 3,613,308**	**$ 3,288,826**	**$ 3,175,699**
Total Pension Liability - Ending (a)	**$ 5,731,148**	**$ 5,769,691**	**$ 5,576,567**	**$ 5,394,732**	**$ 5,176,003**	**$ 4,766,794**	**$ 4,455,275**	**$ 3,726,115**	**$ 3,613,308**	**$ 3,288,826**
Plan Fiduciary Net Position[1]										
Contributions - Employer	$ 308,223	$ 222,028	$ 172,205	$ 168,443	$ 138,053	$ 127,660	$ 115,947	$ 105,713	$ 108,071	$ 115,240
Contributions - Member[2]	56,987	69,565	62,367	63,236	58,661	61,089	60,101	52,972	47,692	43,722
Refunds of contributions to members	(6,568)	(5,766)	(4,662)	(3,814)	(2,854)	(4,214)	(2,315)	(2,879)	(3,111)	(2,664)
Retirement benefits	(319,593)	(305,789)	(289,999)	(275,802)	(259,009)	(244,118)	(226,984)	(213,448)	(200,134)	(189,635)
Net Investment Income[2]	280,033	(174,217)	596,641	15,914	132,232	191,324	270,473	(9,020)	37,104	288,490
Administrative Expense	(2,124)	(1,995)	(1,848)	(1,981)	(1,726)	(1,504)	(1,421)	(1,366)	(1,288)	(1,721)
Other	0	0	0	0	14 [5]	111 [5]	(7,979) [4]	0	2,865	0
Net Change in Plan Fiduciary Net Position	$ 316,958	$ (196,174)	$ 534,704	$ (34,004)	$ 65,371	$ 130,348	$ 207,822	$ (68,028)	$ (8,801)	$ 253,432
Plan Fiduciary Net Position - Beginning	**$ 2,718,234**	**$ 2,914,408**	**$ 2,379,704**	**$ 2,413,708**	**$ 2,348,337**	**$ 2,217,996**	**$ 2,010,174**	**$ 2,078,202**	**$ 2,087,002**	**$ 1,833,570**
Prior Year Adjustment	0	0	0	0	0	(7)	0	0	0	0
Plan Fiduciary Net Position - Ending (b)	**$ 3,035,192**	**$ 2,718,234**	**$ 2,914,408**	**$ 2,379,704**	**$ 2,413,708**	**$ 2,348,337**	**$ 2,217,996**	**$ 2,010,174**	**$ 2,078,202**	**$ 2,087,002**
Net Pension Liability - Ending (a) - (b)	**$ 2,695,956**	**$ 3,051,457**	**$ 2,662,159**	**$ 3,015,028**	**$ 2,762,295**	**$ 2,418,457**	**$ 2,237,279**	**$ 1,715,941**	**$ 1,535,106**	**$ 1,201,824**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	52.96%	47.11%	52.26%	44.11%	46.63%	49.26%	49.78%	53.95%	57.52%	63.46%
Covered Employee Payroll[3]	$ 714,837	$ 666,346	$ 572,484	$ 559,551	$ 553,541	$ 562,853	$ 526,559	$ 526,334	$ 483,641	$ 479,164
Net Pension Liability as a Percentage of Covered Employee Payroll	377.14%	457.94%	465.02%	538.83%	499.02%	429.68%	424.89%	326.02%	317.41%	250.82%

Notes:

1 Does not include 401(h) assets for fiscal years 2017 and later. 401(h) assets totaled $20,605,000 as of June 30, 2023

2 Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later
For fiscal year 2023, 401(h) contributions equaled -$20,000; and associated investment return equaled $1,931,000

3 Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later

4 Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later

5 Northern Trust Settlement

EXHIBIT 3a

Schedule of Employers' Contributions – CERS Non-Hazardous Plan

($ in thousands)

Fiscal Year Ending	Actuarially Determined Contribution[1]	Total Employer Contributions	Contribution Deficiency (Excess)	Covered Employee Payroll[2]	Actual Contributions as a Percentage of Covered Payroll
2023	$ 697,634	$ 697,681	$ (47)	$ 2,966,567	23.52%
2022	636,071	606,807	29,264	2,835,173	21.40%
2021	582,538	472,228	110,310	2,446,612	19.30%
2020	554,612	475,416	79,196	2,462,752	19.30%
2019	529,575	393,453	136,122	2,424,796	16.23%
2018	355,473	358,017	(2,544)	2,454,927	14.58%
2017	331,492	333,554	(2,062)	2,376,290	14.04%
2016	282,767	284,106	(1,339)	2,417,187	11.75%
2015	297,715	298,566	(851)	2,296,716	13.00%
2014	324,231	324,231	0	2,272,270	14.27%

Notes:

[1] Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021 actuarial valuation.

[2] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

EXHIBIT 3b

Schedule of Employers' Contributions – CERS Hazardous Plan

($ in thousands)

Fiscal Year Ending	Actuarially Determined Contribution[1]	Total Employer Contributions	Contribution Deficiency (Excess)	Covered Employee Payroll[2]	Actual Contributions as a Percentage of Covered Payroll
2023	$ 308,037	$ 308,223	$ (186)	$ 714,837	43.12%
2022	269,542	222,028	47,514	666,346	33.32%
2021	240,558	172,205	68,353	572,484	30.08%
2020	206,922	168,443	38,479	559,551	30.10%
2019	197,559	138,053	59,506	553,541	24.94%
2018	124,953	127,660	(2,707)	562,853	22.68%
2017	114,316	115,947	(1,631)	526,559	22.02%
2016	104,952	105,713	(761)	526,334	20.08%
2015	107,514	108,071	(557)	483,641	22.35%
2014	115,240	115,240	0	479,164	24.05%

Notes:

[1] Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021 actuarial valuation.

[2] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

Notes to Schedule of Employers' Contributions for FYE 2023

The actuarially determined contributions effective for fiscal year ending 2023 that are documented in the schedules on the previous pages were calculated as of June 30, 2021. Based on the June 30, 2021 actuarial valuation report, the actuarial methods and assumptions used to calculate these contribution rates are below:

Item	CERS Non-Hazardous Plan	CERS Hazardous Plan
Determined by the Actuarial Valuation as of:	June 30, 2021	June 30, 2021
Actuarial Cost Method:	Entry Age Normal	Entry Age Normal
Asset Valuation Method:	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay	Level Percent of Pay
Amortization Period:	30-year closed period at June 30, 2019 *Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases*	30-year closed period at June 30, 2019 *Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases*
Payroll Growth Rate	2.00%	2.00%
Investment Return:	6.25%	6.25%
Inflation:	2.30%	2.30%
Salary Increases:	3.30% to 10.30%, varies by service	3.55% to 19.05%, varies by service
Mortality:	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019
Phase-In provision:	Board certified rate is phased into the actuarially determined rate in accordance with HB 362 enacted in 2018	Board certified rate is phased into the actuarially determined rate in accordance with HB 362 enacted in 2018

EXHIBIT 4

Sensitivity of the Net Pension Liability to Changes in the Discount Rate

($ in thousands)

Table 1. Sensitivity of the Net Pension Liability to Changes in the Discount Rate for CERS (Non-Hazardous)

1.00% Decrease (5.50%)	Current Discount Rate (6.50%)	1.00% Increase (7.50%)
$ 8,101,230	$ 6,416,509	$ 5,016,442

Table 2. Sensitivity of the Net Pension Liability to Changes in the Discount Rate for CERS (Hazardous)

1.00% Decrease (5.50%)	Current Discount Rate (6.50%)	1.00% Increase (7.50%)
$ 3,404,287	$ 2,695,956	$ 2,117,409

Kentucky Employees Retirement System

GASB No. 67 Accounting Valuation Report
As of June 30, 2023

P: 469.524.0000 | www.grsconsulting.com

November 9, 2023

Board of Trustees
Kentucky Retirement Systems
Perimeter Park West
1260 Louisville Road
Frankfort, KY 40601

Re: GASB 67 Reporting – Actuarial Information – Kentucky Employees Retirement System

Dear Members of the Board:

This report provided herein contains certain information for the **Kentucky Employees Retirement System (KERS)** in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67, "Financial Reporting for Pension Plans" for the fiscal year ending June 30, 2023. A separate report will be provided at a later date with additional accounting information determined in accordance with GASB Statement No. 68, "Accounting and Financial Reporting for Pensions".

The liability calculations presented in this report were performed for the purpose of satisfying the requirements of GASB No. 67 and are not applicable for other purposes, such as determining the plan's funding requirements. The plan's liability for other purposes may produce significantly different results. This report may be provided to parties other than the Board of Trustees of the Kentucky Retirement Systems only in its entirety and only with the permission of the Board.

The total pension liability, net pension liability, and sensitivity information shown in this report are based on an actuarial valuation date of June 30, 2022. The total pension liability was rolled-forward from the valuation date to the plan's fiscal year ending June 30, 2023 using generally accepted actuarial principles. GASB 67 requires the disclosure of a 10-year history of certain information in the Required Supplementary Information within the annual financial report. Information disclosed for years prior to June 30, 2017 were prepared by the prior actuary.

Actuarial Assumptions

The Board of Trustees adopted new actuarial assumptions on June 5, 2023. These assumptions are documented in the report titled "2022 Actuarial Experience Study for the Period Ending June 30, 2022". The Total Pension Liability as of June 30, 2023 is determined using these updated assumptions.

Plan Provisions

House Bill 506 passed during the 2023 legislative session and reinstated the Partial Lump-Sum Optional Form of payment for members who retire on and after January 1, 2024, with the lump-sum payment options expanded to include to 48 or 60 times the member's monthly retirement allowance.

5605 North MacArthur Boulevard | Suite 870 | Irving, Texas 75038-2631

Since this optional form of payment results in a reduced, actuarial equivalent, monthly retirement allowance for members who elect a partial lump-sum option, this provision does not have a fiscal impact to the total pension liability.

House Bill 506 also adjusted the minimum required separation period before a retiree may become reemployed and continue to receive their retirement allowance to one month for all circumstances for each plan. This is a minimal change for members in the hazardous plan, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe this provision of House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members and therefore have reflected no fiscal impact to the total pension liability of the hazardous plan.

Similarly, this is a relatively small change for future retirees in the non-hazardous plan. But as the minimum separation period was previously three months in almost every circumstance, we have assumed that there would be a 1.0% increase in the rate of retirement for each of the first two years a non-hazardous member becomes retirement eligible under the age of 65, in order to reflect a shift in the retirement pattern. The total pension liability as of June 30, 2023 for the non-hazardous plan is determined using these updated benefit provisions.

There have been no other plan provision changes that would materially impact the total pension liability since June 30, 2022. It is our opinion that these procedures for determining the information contained in these reports are reasonable, appropriate, and comply with applicable requirements under GASB No. 67.

Single Discount Rate

Single discount rates of 5.25% for the non-hazardous plan and 6.25% for the hazardous plan were used to measure the total pension liability for the fiscal year ending June 30, 2023. This single discount rate was based on the expected rate of return on pension plan investments for each plan. Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the pension plan’s fiduciary net position and future contributions were projected to be sufficient to finance all the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of the projected benefit payments to determine the total pension liability for each plan.

The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Future contributions are projected assuming that the entire actuarially determined employer contribution is received by each plan each future year, calculated in accordance with the current funding policy.

401(h) Subaccount

Based on guidance issued by GASB in connection with GASB Statement No. 74, the 1% of pay member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered an OPEB asset. As a result, the reported fiduciary net positions as of June 30, 2017 and later are net of the 401(h) asset balance.

Board of Trustees
November 9, 2023
Page 3

Additional Disclosures

This report is based upon information, furnished to us by the Kentucky Public Pensions Authority (KPPA), which includes benefit provisions, membership information, and financial data. We did not audit this data and information, but we did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KPPA. Please see the "Actuarial Valuation Report as of June 30, 2022" and the "2022 Actuarial Experience Study for the Period Ending June 30, 2022" for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for the fiscal year ending June 30, 2023.

To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

Gabriel Roeder Smith & Co.

Daniel J. White, FSA, EA, MAAA
Senior Consultant and Actuary

Janie Shaw, ASA, EA, MAAA
Consultant and Actuary

Krysti Kiesel, ASA, MAAA
Consultant and Actuary

Table of Contents

SECTION 1

EXHIBIT 1a

Schedule of the Employers' Net Pension Liability – KERS Non-Hazardous Plan

($ in thousands)

Fiscal Year Ending June 30, (1)	Total Pension Liability (2)	Plan Fiduciary Net Position (3)	Employers' Net Pension Liability (Asset) (4) = (2) - (3)	Plan Fiduciary Net Position as a Percentage of the Total Pension Liability (5) = (3) / (2)	Covered Employee Payroll[1] (6)	Net Pension Liability as a Percentage of Covered Employee Payroll (7) = (4) / (6)
2023	$ 15,858,669	$ 3,539,943	$ 12,318,726	22.32%	$ 1,648,318	747.35%
2022	16,281,188	3,013,845	13,267,343	18.51%	1,432,960	925.87%
2021	16,335,657	3,018,660	13,316,997	18.48%	1,441,337	923.93%
2020	16,472,733	2,308,080	14,164,653	14.01%	1,476,156	959.56%
2019	16,356,674	2,233,672	14,123,002	13.66%	1,485,854	950.50%
2018	15,608,221	2,004,446	13,603,775	12.84%	1,509,955	900.94%
2017	15,445,206	2,056,870	13,388,336	13.32%	1,602,396	835.52%
2016	13,379,781	1,980,292	11,399,489	14.80%	1,631,025	698.92%
2015	12,359,673	2,327,783	10,031,890	18.83%	1,544,234	649.64%
2014	11,550,110	2,578,291	8,971,819	22.32%	1,577,496	568.74%

Note:

[1] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

EXHIBIT 1b

Schedule of the Employers' Net Pension Liability – KERS Hazardous Plan

($ in thousands)

Fiscal Year Ending June 30, (1)	Total Pension Liability (2)	Plan Fiduciary Net Position (3)	Employers' Net Pension Liability (Asset) (4) = (2) - (3)	Plan Fiduciary Net Position as a Percentage of the Total Pension Liability (5) = (3) / (2)	Covered Employee Payroll[1] (6)	Net Pension Liability as a Percentage of Covered Employee Payroll (7) = (4) / (6)
2023	$ 1,316,521	$ 893,533	$ 422,988	67.87%	$ 223,922	188.90%
2022	1,318,494	810,978	507,516	61.51%	188,648	269.03%
2021	1,311,767	866,140	445,627	66.03%	172,725	258.00%
2020	1,251,027	690,350	560,677	55.18%	171,840	326.28%
2019	1,227,226	680,932	546,294	55.49%	160,600	340.16%
2018	1,150,610	645,485	505,125	56.10%	152,936	330.29%
2017	1,098,630	601,529	497,101	54.75%	178,511	278.47%
2016	919,517	527,879	391,638	57.41%	158,828	246.58%
2015	895,433	552,468	342,965	61.70%	128,680	266.53%
2014	816,850	561,484	255,366	68.74%	129,076	197.84%

Note:
[1] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

EXHIBIT 2a

Schedule of the Employers' Net Pension Liability – KERS Non-Hazardous Plan

($ in thousands)

Change in the Net Pension Liability	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total pension liability										
Service Cost	$ 163,563	$ 165,616	$ 171,472	$ 179,702	$ 184,988	$ 195,681	$ 143,858	$ 139,631	$ 143,847	$ 133,361
Interest	827,579	830,440	838,084	832,178	793,163	785,123	870,725	891,897	859,509	853,653
Benefit Changes	2,024	0	2,091	0	0	9,624	0	0	0	0
Difference between actual and expected experience	310,954	(15,034)	(130,268)	115,515	70,529	153,565	(134,379)	0	30,958	0
Assumption Changes	(691,088)	0	0	0	700,464	0	2,145,530	923,999	694,592	0
Benefit Payments	(1,035,551)	(1,035,491)	(1,018,455)	(1,011,336)	(1,000,691)	(980,978)	(960,309)	(935,419)	(919,343)	(903,564)
Net Change in Total Pension Liability	$ (422,519)	$ (54,469)	$ (137,076)	$ 116,059	$ 748,453	$ 163,015	$ 2,065,425	$ 1,020,108	$ 809,563	$ 83,450
Total Pension Liability - Beginning	**$ 16,281,188**	**$ 16,335,657**	**$ 16,472,733**	**$ 16,356,674**	**$ 15,608,221**	**$ 15,445,206**	**$ 13,379,781**	**$ 12,359,673**	**$ 11,550,110**	**$ 11,466,660**
Total Pension Liability - Ending (a)	**$ 15,858,669**	**$ 16,281,188**	**$ 16,335,657**	**$ 16,472,733**	**$ 16,356,674**	**$ 15,608,221**	**$ 15,445,206**	**$ 13,379,781**	**$ 12,359,673**	**$ 11,550,110**
Plan Fiduciary Net Position[1]										
Contributions - Employer	$ 1,275,007	$ 1,116,869 [6]	$ 1,134,232 [6]	$ 948,592	$ 1,035,462	$ 689,143	$ 757,121	$ 513,084	$ 521,691	$ 296,836
Contributions - Member[2]	84,579	89,607	90,202	96,594	93,759	104,972	100,543	106,495	104,606	97,487
Refunds of contributions to members	(11,847)	(12,116)	(8,953)	(11,523)	(12,342)	(13,603)	(11,819)	(12,130)	(13,552)	(13,627)
Retirement benefits	(1,023,704)	(1,023,375)	(1,009,502)	(999,813)	(988,349)	(967,375)	(948,490)	(923,288)	(905,791)	(889,937)
Net Investment Income[2]	215,880	(162,461)	516,223	52,499	112,371	144,881	220,985	(20,663)	44,570	337,923
Administrative Expense	(13,817)	(13,339)	(11,622)	(11,941)	(11,712)	(10,692)	(10,957)	(10,989)	(10,474)	(11,145)
Other	0	0	0	0	37 [5]	301 [5]	(30,805) [4]	0	8,442	0
Net Change in Plan Fiduciary Net Position	$ 526,098	$ (4,815)	$ 710,580	$ 74,408	$ 229,226	$ (52,373)	$ 76,578	$ (347,491)	$ (250,508)	$ (182,463)
Plan Fiduciary Net Position - Beginning	**$ 3,013,845**	**$ 3,018,660**	**$ 2,308,080**	**$ 2,233,672**	**$ 2,004,446**	**$ 2,056,870**	**$ 1,980,292**	**$ 2,327,783**	**$ 2,578,291**	**$ 2,760,754**
Prior Year Adjustment	0	0	0	0	0	(51)	0	0	0	0
Plan Fiduciary Net Position - Ending (b)	**$ 3,539,943**	**$ 3,013,845**	**$ 3,018,660**	**$ 2,308,080**	**$ 2,233,672**	**$ 2,004,446**	**$ 2,056,870**	**$ 1,980,292**	**$ 2,327,783**	**$ 2,578,291**
Net Pension Liability - Ending (a) - (b)	**$ 12,318,726**	**$ 13,267,343**	**$ 13,316,997**	**$ 14,164,653**	**$ 14,123,002**	**$ 13,603,775**	**$ 13,388,336**	**$ 11,399,489**	**$ 10,031,890**	**$ 8,971,819**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	22.32%	18.51%	18.48%	14.01%	13.66%	12.84%	13.32%	14.80%	18.83%	22.32%
Covered Employee Payroll[3]	$ 1,648,318	$ 1,432,960	$ 1,441,337	$ 1,476,156	$ 1,485,854	$ 1,509,955	$ 1,602,396	$ 1,631,025	$ 1,544,234	$ 1,577,496
Net Pension Liability as a Percentage of Covered Employee Payroll	747.35%	925.87%	923.93%	959.56%	950.50%	900.94%	835.52%	698.92%	649.64%	568.74%

Notes:

1 Does not include 401(h) assets for fiscal years 2017 and later. 401(h) assets totaled $67,263,000 as of June 30, 2023

2 Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later
For fiscal year 2023, 401(h) contributions equaled -$12,000; and associated investment return equaled $4,378,000

3 Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later

4 Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later

5 Northern Trust Settlement

6 Includes $63.1 million and $175.6 million employer cessation contributions in fiscal years 2022 and 2021, respectively

EXHIBIT 2b

Schedule of the Employers' Net Pension Liability – KERS Hazardous Plan

($ in thousands)

Change in the Net Pension Liability	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total pension liability										
Service Cost	$ 26,852	$ 26,885	$ 28,450	$ 25,568	$ 27,117	$ 28,641	$ 21,081	$ 20,751	$ 18,729	$ 16,880
Interest	79,822	79,422	75,743	74,357	69,657	66,536	66,589	64,851	61,005	59,594
Benefit Changes	0	0	26	0	0	705	0	0	0	0
Difference between actual and expected experience	(1,773)	(17,557)	34,789	(1,095)	1,395	24,215	26,902	0	6,067	0
Assumption Changes	(24,197)	0	0	0	50,658	0	127,878	0	52,165	0
Benefit Payments	(82,677)	(82,023)	(78,268)	(75,029)	(72,211)	(68,117)	(63,338)	(61,518)	(59,383)	(57,151)
Net Change in Total Pension Liability	$ (1,973)	$ 6,727	$ 60,740	$ 23,801	$ 76,616	$ 51,980	$ 179,112	$ 24,084	$ 78,583	$ 19,323
Total Pension Liability - Beginning	**$ 1,318,494**	**$ 1,311,767**	**$ 1,251,027**	**$ 1,227,226**	**$ 1,150,610**	**$ 1,098,630**	**$ 919,517**	**$ 895,433**	**$ 816,850**	**$ 797,527**
Total Pension Liability - Ending (a)	**$ 1,316,521**	**$ 1,318,494**	**$ 1,311,767**	**$ 1,251,027**	**$ 1,227,226**	**$ 1,150,610**	**$ 1,098,630**	**$ 919,517**	**$ 895,433**	**$ 816,850**
Plan Fiduciary Net Position[1]										
Contributions - Employer	$ 72,807	$ 59,055	$ 62,200	$ 59,115	$ 55,259	$ 43,661	$ 52,974	$ 23,759	$ 28,536	$ 11,670
Contributions - Member[2]	17,459	20,588	19,961	19,769	17,118	17,891	17,524	15,739	13,207	12,546
Refunds of contributions to members	(4,041)	(4,976)	(4,380)	(3,168)	(2,684)	(2,501)	(2,106)	(2,211)	(2,610)	(2,830)
Retirement benefits	(78,636)	(77,047)	(73,888)	(71,861)	(69,527)	(65,616)	(61,231)	(59,306)	(56,773)	(54,320)
Net Investment Income[2]	76,479	(51,317)	173,152	6,739	36,380	51,467	70,994	(1,653)	8,701	80,724
Administrative Expense	(1,513)	(1,465)	(1,255)	(1,176)	(1,103)	(975)	(919)	(916)	(844)	(897)
Other	0	0	0	0	4 [5]	33 [5]	(3,586) [4]	0	767	0
Net Change in Plan Fiduciary Net Position	$ 82,555	$ (55,162)	$ 175,790	$ 9,418	$ 35,447	$ 43,960	$ 73,650	$ (24,588)	$ (9,016)	$ 46,893
Plan Fiduciary Net Position - Beginning	**$ 810,978**	**$ 866,140**	**$ 690,350**	**$ 680,932**	**$ 645,485**	**$ 601,529**	**$ 527,879**	**$ 552,468**	**$ 561,484**	**$ 514,591**
Prior Year Adjustment	0	0	0	0	0	(4)	0	0	0	0
Plan Fiduciary Net Position - Ending (b)	**$ 893,533**	**$ 810,978**	**$ 866,140**	**$ 690,350**	**$ 680,932**	**$ 645,485**	**$ 601,529**	**$ 527,879**	**$ 552,468**	**$ 561,484**
Net Pension Liability - Ending (a) - (b)	**$ 422,988**	**$ 507,516**	**$ 445,627**	**$ 560,677**	**$ 546,294**	**$ 505,125**	**$ 497,101**	**$ 391,638**	**$ 342,965**	**$ 255,366**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	67.87%	61.51%	66.03%	55.18%	55.49%	56.10%	54.75%	57.41%	61.70%	68.74%
Covered Employee Payroll[3]	$ 223,922	$ 188,648	$ 172,725	$ 171,840	$ 160,600	$ 152,936	$ 178,511	$ 158,828	$ 128,680	$ 129,076
Net Pension Liability as a Percentage of Covered Employee Payroll	188.90%	269.03%	258.00%	326.28%	340.16%	330.29%	278.47%	246.58%	266.53%	197.84%

Notes:

1 Does not include 401(h) assets for fiscal years 2017 and later. 401(h) assets totaled $9,034,000 as of June 30, 2023

2 Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later
For fiscal year 2023, 401(h) contributions equaled -$7,000; and associated investment return equaled $781,000

3 Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later

4 Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later

5 Northern Trust Settlement

EXHIBIT 3a

Schedule of Employers' Contributions – KERS Non-Hazardous Plan

($ in thousands)

Fiscal Year Ending	Actuarially Determined Contribution[1]	Total Employer Contributions	Contribution Deficiency (Excess)	Covered Employee Payroll[2]	Actual Contributions as a Percentage of Covered Payroll
2023	$ 1,034,918	$ 1,275,007	$ (240,089)	$ 1,648,318	77.35%
2022	1,048,861	1,116,869	(68,008)	1,432,960	77.94%
2021	1,056,211	1,134,232	(78,021)	1,441,337	78.69%
2020	1,048,513	948,592	99,921	1,476,156	64.26%
2019	1,055,402	1,035,462	19,940	1,485,854	69.69%
2018	633,879	689,143	(55,264)	1,509,955	45.64%
2017	623,813	757,121	(133,308)	1,602,396	47.25%
2016	512,670	513,084	(414)	1,631,025	31.46%
2015	520,948	521,691	(743)	1,544,234	33.78%
2014	520,765	296,836	223,929	1,577,496	18.82%

Notes:

[1] Actuarially determined contribution for fiscal year ending 2023 is based on the contribution requirement calculated with the June 30, 2021 actuarial valuation.

[2] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

EXHIBIT 3b

Schedule of Employers' Contributions – KERS Hazardous Plan

($ in thousands)

Fiscal Year Ending	Actuarially Determined Contribution[1]	Total Employer Contributions	Contribution Deficiency (Excess)	Covered Employee Payroll[2]	Actual Contributions as a Percentage of Covered Payroll
2023	$ 72,778	$ 72,807	$ (29)	$ 223,922	32.51%
2022	59,052	59,055	(3)	188,648	31.30%
2021	62,181	62,200	(19)	172,725	36.01%
2020	59,096	59,115	(19)	171,840	34.40%
2019	55,230	55,259	(29)	160,600	34.41%
2018	31,321	43,661	(12,340)	152,936	28.55%
2017	37,630	52,974	(15,344)	178,511	29.68%
2016	23,690	23,759	(69)	158,828	14.96%
2015	28,374	28,536	(162)	128,680	22.18%
2014	13,570	11,670	1,900	129,076	9.04%

Notes:

[1] Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021 actuarial valuation.

[2] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

Notes to Schedule of Employers' Contributions for FYE 2023

The actuarially determined contributions effective for fiscal year ending 2023 that are documented in the schedules on the previous pages were calculated as of June 30, 2021. Based on the June 30, 2021 actuarial valuation report, the actuarial methods and assumptions used to calculate these contribution rates are below:

Item	KERS Non-Hazardous Plan	KERS Hazardous Plan
Determined by the Actuarial Valuation as of:	June 30, 2021	June 30, 2021
Actuarial Cost Method:	Entry Age Normal	Entry Age Normal
Asset Valuation Method:	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay	Level Percent of Pay
Amortization Period:	30-year closed period at June 30, 2019 *Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases*	30-year closed period at June 30, 2019 *Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases*
Payroll Growth Rate	0.00%	0.00%
Investment Return:	5.25%	6.25%
Inflation:	2.30%	2.30%
Salary Increases:	3.30% to 15.30%, varies by service	3.55% to 20.05%, varies by service
Mortality:	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019

EXHIBIT 4

Sensitivity of the Net Pension Liability to Changes in the Discount Rate

($ in thousands)

Table 1. Sensitivity of the Net Pension Liability to Changes in the Discount Rate for KERS (Non-Hazardous)

1.00% Decrease (4.25%)	Current Discount Rate (5.25%)	1.00% Increase (6.25%)
$ 14,159,095	$ 12,318,726	$ 10,793,619

Table 2. Sensitivity of the Net Pension Liability to Changes in the Discount Rate for KERS (Hazardous)

1.00% Decrease (5.25%)	Current Discount Rate (6.25%)	1.00% Increase (7.25%)
$ 580,511	$ 422,988	$ 295,371

State Police Retirement System

GASB No. 67 Accounting Valuation Report

As of June 30, 2023

P: 469.524.0000 | www.grsconsulting.com

September 20, 2023

Board of Trustees
Kentucky Retirement Systems
Perimeter Park West
1260 Louisville Road
Frankfort, KY 40601

Re: GASB 67 Reporting – Actuarial Information – State Police Retirement System

Dear Members of the Board:

This report provided herein contains certain information for the **State Police Retirement System (SPRS)** in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67, "Financial Reporting for Pension Plans" for the fiscal year ending June 30, 2023. A separate report will be provided at a later date with additional accounting information determined in accordance with GASB Statement No. 68, "Accounting and Financial Reporting for Pensions".

The liability calculations presented in this report were performed for the purpose of satisfying the requirements of GASB No. 67 and are not applicable for other purposes, such as determining the plan's funding requirements. The plan's liability for other purposes may produce significantly different results. This report may be provided to parties other than the Board of Trustees of the Kentucky Retirement Systems only in its entirety and only with the permission of the Board.

The total pension liability, net pension liability, and sensitivity information shown in this report are based on an actuarial valuation date of June 30, 2022. The total pension liability was rolled-forward from the valuation date to the plan's fiscal year ending June 30, 2023 using generally accepted actuarial principles. GASB 67 requires the disclosure of a 10-year history of certain information in the Required Supplementary Information within the annual financial report. Information disclosed for years prior to June 30, 2017 were prepared by the prior actuary.

Actuarial Assumptions

The Board of Trustees adopted new actuarial assumptions on June 5, 2023. These assumptions are documented in the report titled "2022 Actuarial Experience Study for the Period Ending June 30, 2022". The Total Pension Liability as of June 30, 2023 is determined using these updated assumptions.

Plan Provisions

House Bill 506 passed during the 2023 legislative session and reinstated the Partial Lump-Sum Optional Form of payment for members who retire on and after January 1, 2024, with the lump-sum payment options expanded to include to 48 or 60 times the member's monthly retirement allowance.

5605 North MacArthur Boulevard | Suite 870 | Irving, Texas 75038-2631

Board of Trustees
September 20, 2023
Page 2

Since this optional form of payment results in a reduced, actuarial equivalent, monthly retirement allowance for members who elect a partial lump-sum option, this provision does not have a fiscal impact to the total pension liability.

House Bill 506 also adjusted the minimum required separation period before a retiree may become reemployed and continue to receive their retirement allowance to one month for all circumstances for each plan. This is a minimal change for members in SPRS, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe this provision of House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members and therefore have reflected no fiscal impact to the total pension liability.

There have been no other plan provision changes that would materially impact the total pension liability since June 30, 2022. It is our opinion that these procedures for determining the information contained in these reports are reasonable, appropriate, and comply with applicable requirements under GASB No. 67.

Single Discount Rate

A single discount rate of 5.25% was used to measure the total pension liability for the fiscal year ending June 30, 2023. This single discount rate was based on the expected rate of return on pension plan investments. Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the pension plan's fiduciary net position and future contributions were projected to be sufficient to finance all the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of the projected benefit payments to determine the total pension liability.

The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Future contributions are projected assuming that the entire actuarially determined employer contribution is received each future year, calculated in accordance with the current funding policy.

401(h) Subaccount

Based on guidance issued by GASB in connection with GASB Statement No. 74, the 1% of pay member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered an OPEB asset. As a result, the reported fiduciary net positions as of June 30, 2017 and later are net of the 401(h) asset balance.

Additional Disclosures

This report is based upon information, furnished to us by the Kentucky Public Pensions Authority (KPPA), which includes benefit provisions, membership information, and financial data. We did not audit this data and information, but we did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KPPA. Please see the "Actuarial Valuation Report as of June 30, 2022" and the "2022 Actuarial Experience Study for the Period Ending June 30, 2022" for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for the fiscal year ending June 30, 2023. To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All three of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

Gabriel Roeder Smith & Co.

Daniel J. White

Daniel J. White, FSA, EA, MAAA
Senior Consultant and Actuary

Janie Shaw

Janie Shaw, ASA, EA, MAAA
Consultant and Actuary

Krysti Kiesel

Krysti Kiesel, ASA, MAAA
Senior Analyst and Actuary

Table of Contents

SECTION 1

EXHIBIT 1

Schedule of the Employers' Net Pension Liability – SPRS Plan

($ in thousands)

Fiscal Year Ending June 30, (1)	Total Pension Liability (2)	Plan Fiduciary Net Position (3)	Employers' Net Pension Liability (Asset) (4) = (2) - (3)	Plan Fiduciary Net Position as a Percentage of the Total Pension Liability (5) = (3) / (2)	Covered Employee Payroll[1] (6)	Net Pension Liability as a Percentage of Covered Employee Payroll (7) = (4) / (6)
2023	$ 1,039,813	$ 591,514	$ 448,299	56.89%	$ 65,693	682.42%
2022	1,057,752	551,699	506,053	52.16%	48,061	1,052.94%
2021	1,055,824	356,346	699,478	33.75%	47,873	1,461.11%
2020	1,049,237	293,949	755,288	28.02%	49,019	1,540.81%
2019	1,035,000	286,165	748,835	27.65%	49,515	1,512.34%
2018	969,622	267,572	702,050	27.60%	50,346	1,394.45%
2017	943,271	255,737	687,534	27.11%	54,065	1,271.68%
2016	795,421	218,012	577,409	27.41%	46,685	1,236.82%
2015	734,156	247,228	486,928	33.68%	45,765	1,063.97%
2014	681,118	260,974	420,144	38.32%	44,616	941.69%

Note:

[1] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

EXHIBIT 2

Schedule of the Employers' Net Pension Liability – SPRS Plan

($ in thousands)

Change in the Net Pension Liability	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total pension liability										
Service Cost	$ 13,229	$ 12,158	$ 12,530	$ 13,192	$ 11,726	$ 11,890	$ 8,297	$ 8,402	$ 7,695	$ 7,142
Interest	53,853	53,740	53,417	52,697	49,301	47,978	51,769	52,951	50,661	50,391
Benefit Changes	0	3,130	35	0	0	184	0	0	0	0
Difference between actual and expected experience	10,204	(2,700)	4,127	10,859	20,952	25,126	8,143	0	9,331	0
Assumption Changes	(31,255)	0	0	0	44,510	0	136,602	56,191	40,201	0
Benefit Payments	(63,970)	(64,400)	(63,522)	(62,511)	(61,111)	(58,827)	(56,960)	(56,279)	(54,850)	(53,239)
Net Change in Total Pension Liability	$ (17,939)	$ 1,928	$ 6,587	$ 14,237	$ 65,378	$ 26,351	$ 147,850	$ 61,265	$ 53,038	$ 4,294
Total Pension Liability - Beginning	**$ 1,057,752**	**$ 1,055,824**	**$ 1,049,237**	**$ 1,035,000**	**$ 969,622**	**$ 943,271**	**$ 795,421**	**$ 734,156**	**$ 681,118**	**$ 676,824**
Total Pension Liability - Ending (a)	**$ 1,039,813**	**$ 1,057,752**	**$ 1,055,824**	**$ 1,049,237**	**$ 1,035,000**	**$ 969,622**	**$ 943,271**	**$ 795,421**	**$ 734,156**	**$ 681,118**
Plan Fiduciary Net Position[1]										
Contributions - Employer	$ 58,120	$ 277,341	$ 59,650	$ 59,453	$ 60,048	$ 46,877	$ 63,239	$ 25,822	$ 31,990	$ 20,279
Contributions - Member[2]	5,250	4,773	4,752	4,767	5,062	5,522	5,348	5,263	5,244	5,075
Refunds of contributions to members	(166)	(280)	(273)	(88)	(162)	(22)	(26)	(11)	(85)	(213)
Retirement benefits	(63,804)	(64,120)	(63,249)	(62,423)	(60,949)	(58,805)	(56,934)	(56,268)	(54,765)	(53,026)
Net Investment Income[2]	40,708	(22,088)	61,729	6,341	14,816	18,437	26,795	(3,843)	3,426	40,374
Administrative Expense	(293)	(273)	(212)	(266)	(225)	(194)	(181)	(178)	(201)	(215)
Other	0	0	0	0	3 [5]	21 [5]	(517) [4]	0	645	0
Net Change in Plan Fiduciary Net Position	$ 39,815	$ 195,353	$ 62,397	$ 7,784	$ 18,593	$ 11,836	$ 37,724	$ (29,215)	$ (13,746)	$ 12,274
Plan Fiduciary Net Position - Beginning	**$ 551,699**	**$ 356,346**	**$ 293,949**	**$ 286,165**	**$ 267,572**	**$ 255,737**	**$ 218,012**	**$ 247,228**	**$ 260,974**	**$ 248,700**
Prior Year Adjustment	0	0	0	0	0	(1)	0	0	0	0
Plan Fiduciary Net Position - Ending (b)	**$ 591,514**	**$ 551,699**	**$ 356,346**	**$ 293,949**	**$ 286,165**	**$ 267,572**	**$ 255,737**	**$ 218,012**	**$ 247,228**	**$ 260,974**
Net Pension Liability - Ending (a) - (b)	**$ 448,299**	**$ 506,053**	**$ 699,478**	**$ 755,288**	**$ 748,835**	**$ 702,050**	**$ 687,534**	**$ 577,409**	**$ 486,928**	**$ 420,144**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	56.89%	52.16%	33.75%	28.02%	27.65%	27.60%	27.11%	27.41%	33.68%	38.32%
Covered Employee Payroll[3]	$ 65,693	$ 48,061	$ 47,873	$ 49,019	$ 49,515	$ 50,346	$ 54,065	$ 46,685	$ 45,765	$ 44,616
Net Pension Liability as a Percentage of Covered Employee Payroll	682.42%	1052.94%	1461.11%	1540.81%	1512.34%	1394.45%	1271.68%	1236.82%	1063.97%	941.69%

Notes:

[1] Does not include 401(h) assets for fiscal years 2017 and later. 401(h) assets totaled $1,312,000 as of June 30, 2023

[2] Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later
For fiscal year 2023, 401(h) contributions equaled -$8,000; and associated investment return equaled $93,000

[3] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later

[4] Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later

[5] Northern Trust Settlement

EXHIBIT 3

Schedule of Employers' Contributions – SPRS Plan

($ in thousands)

Fiscal Year Ending	Actuarially Determined Contribution[1]	Total Employer Contributions	Contribution Deficiency (Excess)	Covered Employee Payroll[2]	Actual Contributions as a Percentage of Covered Payroll
2023	$ 58,120	$ 58,120	$ -	$ 65,693	88.47%
2022	62,341	277,341	(215,000)	48,061	577.06%
2021	59,263	59,650	(387)	47,873	124.60%
2020	58,358	59,453	(1,095)	49,019	121.29%
2019	58,948	60,048	(1,100)	49,515	121.27%
2018	36,033	46,877	(10,844)	50,346	93.11%
2017	35,937	63,240	(27,303)	54,065	116.97%
2016	25,723	25,822	(99)	46,685	55.31%
2015	31,444	31,990	(546)	45,765	69.90%
2014	25,808	20,279	5,529	44,616	45.45%

Notes:

[1] Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021 actuarial valuation, as amended by HB1 passed during the 2022 legislative session.

[2] Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

Notes to Schedule of Employers' Contributions for FYE 2023

The actuarially determined contribution effective for fiscal year ending 2023 that is documented in the schedule on the previous page was calculated as of June 30, 2021. Based on the June 30, 2021 actuarial valuation report, the actuarial methods and assumptions used to calculate these contribution rates are below:

Item	SPRS Plan
Determined by the Actuarial Valuation as of:	June 30, 2021
Actuarial Cost Method:	Entry Age Normal
Asset Valuation Method:	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay
Amortization Period:	30-year closed period at June 30, 2019 *Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases*
Payroll Growth Rate	0.00%
Investment Return:	5.25%
Inflation:	2.30%
Salary Increases:	3.55% to 16.05%, varies by service
Mortality:	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019

EXHIBIT 4

Sensitivity of the Net Pension Liability to Changes in the Discount Rate

($ in thousands)

1.00% Decrease (4.25%)	Current Discount Rate (5.25%)	1.00% Increase (6.25%)
$ 577,298	$ 448,299	$ 342,465

County Employees Retirement System

GASB No. 74 Accounting Valuation Report
As of June 30, 2023

P: 469.524.0000 | www.grsconsulting.com

November 9, 2023

Board of Trustees
County Employees Retirement Systems
Perimeter Park West
1260 Louisville Road
Frankfort, KY 40601

Re: GASB No. 74 Reporting – Actuarial Information – County Employees Retirement System

Dear Members of the Board:

This report provided herein contains certain information for the **County Employees Retirement System (CERS)** in connection with the Governmental Accounting Standards Board (GASB) Statement No. 74, "Financial Reporting for Postemployment Benefit Plans Other than Pension Plans" for the fiscal year ending June 30, 2023. A separate report will be provided at a later date with additional accounting information determined in accordance with GASB Statement No. 75, "Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions".

The liability calculations presented in this report were performed for the purpose of satisfying the requirements of GASB No. 74 and are not applicable for other purposes, such as determining the plan's funding requirements. The plan's liability for other purposes may produce significantly different results. This report may be provided to parties other than the Board of Trustees of the County Employees Retirement Systems only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The total OPEB liability, net OPEB liability, and sensitivity information shown in this report are based on an actuarial valuation date of June 30, 2022. The total OPEB liability was rolled-forward from the valuation date to the plan's fiscal year ending June 30, 2023, using generally accepted actuarial principles. GASB No. 74 requires the disclosure of a 10-year history of certain information in the Required Supplementary Information within the annual financial report. The exhibits provided in this report include the applicable information for historical years that were calculated in accordance with this accounting standard. Information disclosed for years prior to June 30, 2017 were prepared by the prior actuary.

Actuarial Assumptions

The Board of Trustees adopted new actuarial assumptions on May 9, 2023. These assumptions are documented in the report titled "2022 Actuarial Experience Study for the Period Ending June 30, 2022". Additionally, the discount rate used to calculate the total OPEB liability increased from 5.70% to 5.93% for the non-hazardous plan and from 5.61% to 5.97% for the hazardous plan (see further discussion on the calculation of the single discount rate later in this letter). The Total OPEB Liability as of June 30, 2023 is determined using these updated assumptions.

5605 North MacArthur Boulevard | Suite 870 | Irving, Texas 75038-2631

Board of Trustees
November 9, 2023
Page 2

Plan Provisions

House Bill 506 passed during the 2023 legislative session and adjusted the minimum required separation period before a retiree may become reemployed to be one month for all circumstances for each System maintained by KPPA. This is a minimal change for members in the hazardous plan, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members and therefore have reflected no fiscal impact to the total OPEB liability of the hazardous plan.

Similarly, this is a relatively small change for future retirees in the non-hazardous plan. But as the minimum separation period was previously three months in almost every circumstance, we have assumed that there would be a 1.0% increase in the rate of retirement for each of the first two years a non-hazardous member becomes retirement eligible under the age of 65, in order to reflect a shift in the retirement pattern. The total OPEB liability as of June 30, 2023 for the non-hazardous plan is determined using these updated benefit provisions.

There were no other plan provision changes that would materially impact the total OPEB liability since June 30, 2022. It is our opinion that these procedures for determining the information contained in these reports are reasonable and appropriate, and comply with applicable requirements under GASB No. 74.

Implicit Employer Subsidy for Non-Medicare Retirees

The fully-insured premiums paid for the Kentucky Employees' Health Plan are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit employer subsidy for the non-Medicare eligible retirees. GASB No. 74 requires that the liability associated with this implicit subsidy be included in the calculation of the Total OPEB Liability.

Single Discount Rate

Single discount rates of 5.93% for the non-hazardous plan and 5.97% for the hazardous plan were used to measure the total OPEB liability for the fiscal year ending June 30, 2023. They are based on the expected rate of return on OPEB plan investments of 6.50% and a municipal bond rate of 3.86%, as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2023.

Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the plan's fiduciary net position and future contributions were projected to be sufficient to finance the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on insurance plan investments was applied to all periods of the projected benefit payments paid from the retirement system. However, the cost associated with the implicit employer subsidy is not currently being included in the calculation of the plan's actuarial determined contributions, and it is our understanding that any cost associated with the implicit subsidy will not be paid out of the plan's trust. Therefore, the municipal bond rate was applied to future expected benefit payments associated with the implicit subsidy.

The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Future contributions are projected assuming that the entire actuarially determined employer contribution is received by each plan each future year, calculated in accordance with the current funding policy.

401(h) Subaccount

Based on guidance issued by GASB in connection with GASB Statement No. 74, the 1% of pay member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered an OPEB asset. As a result, the reported fiduciary net position includes these 401(h) assets. Additionally, these member contributions and associated investment income and administrative expenses are included in the reconciliation of the fiduciary net position.

Additional Disclosures

This report is based upon information, furnished to us by the Kentucky Public Pensions Authority (KPPA), which includes benefit provisions, membership information, and financial data. We did not audit this data and information, but we did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KPPA. Please see the "Actuarial Valuation Report as of June 30, 2022" and the "2022 Actuarial Experience Study for the Period Ending June 30, 2022" for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for the fiscal year ending June 30, 2023.

To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

Gabriel Roeder Smith & Company

Daniel J. White, FSA, EA, MAAA
Senior Consultant and Actuary

Janie Shaw, ASA, EA, MAAA
Consultant and Actuary

Krysti Kiesel, ASA, MAAA
Consultant and Actuary

Table of Contents

SECTION 1

EXHIBIT 1a

Schedule of the Employers' Net OPEB Liability – CERS Non-Hazardous Plan

($ in thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Employee Payroll[1]	Net OPEB Liability as a Percentage of Covered Employee Payroll
(1)	(2)	(3)	(4) = (2) - (3)	(5) = (3) / (2)	(6)	(7) = (4) / (6)
2023	$ 3,260,308	$ 3,398,375	$ (138,067)	104.23%	$ 2,982,960	-4.63%
2022	5,053,498	3,079,984	1,973,514	60.95%	2,843,218	69.41%
2021	5,161,251	3,246,801	1,914,450	62.91%	2,619,695	73.08%
2020	4,996,309	2,581,613	2,414,696	51.67%	2,620,585	92.14%
2019	4,251,466	2,569,511	1,681,955	60.44%	2,577,378	65.26%
2018	4,189,606	2,414,126	1,775,480	57.62%	2,570,156	69.08%
2017	4,222,878	2,212,536	2,010,342	52.39%	2,480,130	81.06%

Note:

[1] Based on derived compensation using the provided employer contribution information.

EXHIBIT 1b

Schedule of the Employers' Net OPEB Liability – CERS Hazardous Plan

($ in thousands)

Year (1)	Total OPEB Liability (2)	Plan Fiduciary Net Position (3)	Net OPEB Liability/(Asset) (4) = (2) - (3)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability (5) = (3) / (2)	Covered Employee Payroll[1] (6)	Net OPEB Liability as a Percentage of Covered Employee Payroll (7) = (4) / (6)
2023	$ 1,771,015	$ 1,634,192	$ 136,823	92.27%	$ 719,666	19.01%
2022	2,374,457	1,522,671	851,786	64.13%	668,667	127.39%
2021	2,436,383	1,627,824	808,559	66.81%	613,985	131.69%
2020	2,245,222	1,321,117	924,105	58.84%	596,001	155.05%
2019	2,080,574	1,340,714	739,860	64.44%	583,632	126.77%
2018	1,993,941	1,280,982	712,959	64.24%	588,526	121.14%
2017	2,015,673	1,189,001	826,672	58.99%	542,710	152.32%

Note:
[1] Based on derived compensation using the provided employer contribution information.

EXHIBIT 2

Development of Single Discount Rate

	CERS Non-Hazardous	CERS Hazardous
Single Discount Rate	5.93%	5.97%
Long-Term Expected Rate of Return	6.50%	6.50%
Long-Term Municipal Bond Rate[1]	3.86%	3.86%

Notes:

[1] Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2023.

EXHIBIT 3a

Schedule of the Employers' Net OPEB Liability – CERS Non-Hazardous Plan

($ in thousands)

Change in the Net OPEB Liability	2023	2022	2021	2020	2019	2018	2017
Total OPEB liability							
Service Cost	$ 98,045	$ 138,225	$ 132,407	$ 131,289	$ 119,011	$ 122,244	$ 85,468
Interest on the total OPEB liability	283,330	263,390	262,128	236,126	240,352	242,048	240,854
Benefit Changes	5,153	74,108	3,359	0	0	4,306	0
Difference between actual and expected experience	(2,134,260)	(68,111)	(340,831)	505,843	(404,301)	(240,568)	(6,641)
Assumption Changes	120,132	(323,247)	282,975	60,225	268,842	(4,876)	520,286
Benefit Payments[1,2]	(165,590)	(192,118)	(175,096)	(188,640)	(162,044)	(156,426)	(140,120)
Net Change in Total OPEB Liability	(1,793,190)	(107,753)	164,942	744,843	61,860	(33,272)	699,847
Total OPEB Liability - Beginning	**$ 5,053,498**	**$ 5,161,251**	**$ 4,996,309**	**$ 4,251,466**	**$ 4,189,606**	**$ 4,222,878**	**$ 3,523,031**
Total OPEB Liability - Ending (a)	**$ 3,260,308**	**$ 5,053,498**	**$ 5,161,251**	**$ 4,996,309**	**$ 4,251,466**	**$ 4,189,606**	**$ 4,222,878**
Plan Fiduciary Net Position							
Contributions - Employer[2]	$ 151,052	$ 187,204	$ 186,509	$ 179,521	$ 168,905	$ 145,809	$ 133,326
Contributions - Member	17,751	15,925	13,613	12,964	11,801	10,825	9,158
Benefit Payments[1,2]	(165,590)	(192,118)	(175,096)	(188,640)	(162,044)	(156,426)	(140,120)
OPEB Plan Net Investment Income	316,115	(176,895)	641,084	9,160	137,591	202,068	264,782
OPEB Plan Administrative Expense	(937)	(933)	(922)	(903)	(877)	(761)	(789)
Other	0	0	0	0	9 [4]	75 [4]	0
Net Change in Plan Fiduciary Net Position	318,391	(166,817)	665,188	12,102	155,385	201,590	266,357
Plan Fiduciary Net Position - Beginning	**$ 3,079,984**	**$ 3,246,801**	**$ 2,581,613**	**$ 2,569,511**	**$ 2,414,126**	**$ 2,212,536**	**$ 1,946,179**
Plan Fiduciary Net Position - Ending (b)	**$ 3,398,375**	**$ 3,079,984**	**$ 3,246,801**	**$ 2,581,613**	**$ 2,569,511**	**$ 2,414,126**	**$ 2,212,536**
Net OPEB Liability - Ending (a) - (b)	**(138,067)**	**1,973,514**	**1,914,450**	**2,414,696**	**1,681,955**	**1,775,480**	**2,010,342**
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	104.23%	60.95%	62.91%	51.67%	60.44%	57.62%	52.39%
Covered Employee Payroll[3]	$ 2,982,960	$ 2,843,218	$ 2,619,695	$ 2,620,585	$ 2,577,378	$ 2,570,156	$ 2,480,130
Net OPEB Liability as a Percentage of Covered Employee Payroll	-4.63%	69.41%	73.08%	92.14%	65.26%	69.08%	81.06%

Notes:

1 Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

2 Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to $45,007,734 for fiscal year 2023.

3 Based on derived compensation using the provided employer contribution information.

4 Northern Trust Settlement

EXHIBIT 3b

Schedule of the Employers' Net OPEB Liability – CERS Hazardous Plan

($ in thousands)

Change in the Net OPEB Liability	2023	2022	2021	2020	2019	2018	2017
Total OPEB liability							
Service Cost	$ 36,330	$ 52,265	$ 48,413	$ 47,443	$ 32,623	$ 33,948	$ 20,493
Interest on the total OPEB liability	130,614	120,640	116,710	115,998	116,768	118,009	113,166
Benefit Changes	0	44,909	1,146	0	0	484	0
Difference between actual and expected experience	(646,006)	(7,814)	(47,937)	38,156	(103,317)	(100,348)	(2,470)
Assumption Changes	(31,947)	(176,969)	159,106	46,925	116,618	(2,500)	391,061
Benefit Payments[1,2]	(92,433)	(94,957)	(86,277)	(83,874)	(76,059)	(71,325)	(63,656)
Net Change in Total OPEB Liability	(603,442)	(61,926)	191,161	164,648	86,633	(21,732)	458,594
Total OPEB Liability - Beginning	**$ 2,374,457**	**$ 2,436,383**	**$ 2,245,222**	**$ 2,080,574**	**$ 1,993,941**	**$ 2,015,673**	**$ 1,557,079**
Total OPEB Liability - Ending (a)	**$ 1,771,015**	**$ 2,374,457**	**$ 2,436,383**	**$ 2,245,222**	**$ 2,080,574**	**$ 1,993,941**	**$ 2,015,673**
Plan Fiduciary Net Position							
Contributions - Employer[2]	$ 49,547	$ 66,320	$ 63,509	$ 59,662	$ 60,445	$ 51,615	$ 44,325
Contributions - Member	4,258	3,654	3,098	2,762	2,458	2,173	1,708
Benefit Payments[1,2]	(92,433)	(94,957)	(86,277)	(83,874)	(76,059)	(71,325)	(63,656)
OPEB Plan Net Investment Income	150,671	(79,668)	326,905	2,315	73,317	109,854	143,892
OPEB Plan Administrative Expense	(522)	(502)	(528)	(462)	(434)	(376)	(381)
Other	0	0	0	0	5 [4]	40 [4]	0
Net Change in Plan Fiduciary Net Position	111,521	(105,153)	306,707	(19,597)	59,732	91,981	125,888
Plan Fiduciary Net Position - Beginning	**$ 1,522,671**	**$ 1,627,824**	**$ 1,321,117**	**$ 1,340,714**	**$ 1,280,982**	**$ 1,189,001**	**$ 1,063,113**
Plan Fiduciary Net Position - Ending (b)	**$ 1,634,192**	**$ 1,522,671**	**$ 1,627,824**	**$ 1,321,117**	**$ 1,340,714**	**$ 1,280,982**	**$ 1,189,001**
Net OPEB Liability - Ending (a) - (b)	**136,823**	**851,786**	**808,559**	**924,105**	**739,860**	**712,959**	**826,672**
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	92.27%	64.13%	66.81%	58.84%	64.44%	64.24%	58.99%
Covered Employee Payroll[3]	$ 719,666	$ 668,667	$ 613,985	$ 596,001	$ 583,632	$ 588,526	$ 542,710
Net OPEB Liability as a Percentage of Covered Employee Payroll	19.01%	127.39%	131.69%	155.05%	126.77%	121.14%	152.32%

Notes:

1 Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

2 Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to -$856,422 for fiscal year 2023.

3 Based on derived compensation using the provided employer contribution information.

4 Northern Trust Settlement

EXHIBIT 4a

Schedule of Employers' Contributions – CERS Non-Hazardous Plan

($ in thousands)

Fiscal Year Ending[1]	Actuarially Determined Contribution[2]	Total Employer Contributions[3]	Contribution Deficiency (Excess)	Covered Employee Payroll[4]	Actual Contributions as a Percentage of Covered Payroll
2023	$ 101,122	$ 106,044	$ (4,922)	$ 2,982,960	3.55%
2022	118,551	123,366	(4,815)	2,843,218	4.34%
2021	142,249	129,903	12,346	2,619,695	4.96%
2020	124,740	129,268	(4,528)	2,620,585	4.93%
2019	160,055	139,655	20,400	2,577,378	5.42%
2018	120,797	124,619	(3,822)	2,570,156	4.85%
2017	122,270	120,712	1,558	2,480,130	4.87%
2016	110,987	111,836	(849)	2,352,762	4.75%
2015	119,511	119,444	67	2,296,716	5.20%
2014	130,652	123,278	7,374	2,272,270	5.43%

Notes:

[1] Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

[2] Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021 actuarial valuation.

[3] Employer contributions do not include the expected implicit subsidy included in exhibit 3.

[4] Based on derived compensation using the provided employer contribution information.

EXHIBIT 4b

Schedule of Employers' Contributions – CERS Hazardous Plan

($ in thousands)

Fiscal Year Ending[1]	Actuarially Determined Contribution[2]	Total Employer Contributions[3]	Contribution Deficiency (Excess)	Covered Employee Payroll[4]	Actual Contributions as a Percentage of Covered Payroll
2023	$ 48,793	$ 50,404	$ (1,611)	$ 719,666	7.00%
2022	58,375	59,905	(1,530)	668,667	8.96%
2021	60,539	59,799	740	613,985	9.74%
2020	56,739	57,897	(1,158)	596,001	9.71%
2019	71,028	62,272	8,756	583,632	10.67%
2018	55,027	56,002	(975)	588,526	9.52%
2017	53,131	51,537	1,594	542,710	9.50%
2016	64,253	67,619	(3,366)	492,851	13.72%
2015	69,103	71,778	(2,675)	483,641	14.84%
2014	74,360	74,792	(432)	479,164	15.61%

Notes:

[1] Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

[2] Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021 actuarial valuation.

[3] Employer contributions do not include the expected implicit subsidy included in exhibit 3.

[4] Based on derived compensation using the provided employer contribution information.

Notes to Schedule of Employers' Contributions for FYE 2023

The actuarially determined contributions effective for fiscal year ending 2023 that are documented in the schedule on the previous pages were calculated as of June 30, 2021. Based on the June 30, 2021 actuarial valuation report, the actuarial methods and assumptions used to calculate these contributions are below:

Item	CERS Non-Hazardous	CERS Hazardous
Determine by the Actuarial Valuation as of:	June 30, 2021	June 30, 2021
Actuarial Cost Method:	Entry Age Normal	Entry Age Normal
Asset Valuation Method:	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay	Level Percent of Pay
Amortization Period:	30-year closed period at June 30, 2019 *Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases*	30-year closed period at June 30, 2019 *Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases*
Payroll Growth Rate:	2.00%	2.00%
Investment Return:	6.25%	6.25%
Inflation:	2.30%	2.30%
Salary Increases:	3.30% to 10.30%, varies by service	3.55% to 19.05%, varies by service
Mortality:	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.
Healthcare Trend Rates: Pre-65	Initial trend starting at 6.30% at January 1, 2023, gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023, gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.
Post-65	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.

EXHIBIT 5a

Sensitivity of the Net OPEB Liability to Changes in the Discount Rate and Healthcare Trend Rate
CERS Non-Hazardous Plan
($ in thousands)

Table 1. Sensitivity of the Net OPEB Liability to Changes in the Discount Rate

1.00% Decrease, 4.93%	Current Discount Rate, 5.93%	1.00% Increase, 6.93%
$ 259,098	$ (138,067)	$ (470,644)

Table 2. Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rate

1.00% Decrease	Current Healthcare Cost Trend Rate	1.00% Increase
$ (442,528)	$ (138,067)	$ 235,935

EXHIBIT 5b

Sensitivity of the Net OPEB Liability to Changes in the Discount Rate and Healthcare Trend Rate
CERS Hazardous Plan
($ in thousands)

Table 1. Sensitivity of the Net OPEB Liability to Changes in the Discount Rate

1.00% Decrease, 4.97%	Current Discount Rate, 5.97%	1.00% Increase, 6.97%
$ 346,027	$ 136,823	$ (37,500)

Table 2. Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rate

1.00% Decrease	Current Healthcare Cost Trend Rate	1.00% Increase
$ 1,559	$ 136,823	$ 300,182

APPENDIX 1

Appendix 1

Development of Baseline Claims Cost

For non-Medicare retirees, the initial per capita costs were developed using retiree claims experience for calendar years 2020 through 2022. The claims were projected on an incurred claim basis, adjusted for prescription drug rebates, and loaded for administrative expense. The per capita costs shown in the table below also include HRA contributions for retirees on the CDHP plans. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. The fully-insured premiums paid to the Kentucky Employees' Health Plan are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit employer subsidy for the non-Medicare eligible retirees.

For Medicare retirees, the initial per capita costs were estimated based on the plan premiums effective January 1, 2023, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees.

Age graded and sex distinct premiums are utilized by this valuation. These costs are appropriate for the unique age and sex distribution currently existing. Over the future years covered by this valuation, the age and sex distribution will most likely change. Therefore, our process "distributes" the average premium over all age/sex combinations and assigns a unique premium for each combination. The age/sex specific costs more accurately reflect the health care utilization and cost at that age.

For Those Not Eligible for Medicare (as of January 1, 2023)		
Age	Male	Female
40	$373.36	$606.68
50	605.22	745.56
60	1,028.58	1,012.80
64	1,250.79	1,180.40

For Those Eligible for Medicare (as of January 1, 2023)		
Age	Male	Female
65	$78.14	$73.71
75	91.43	89.21
85	96.68	97.82

Blake Orth is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Blake Orth

Blake Orth, FSA, EA, MAAA

Kentucky Employees Retirement System

GASB No. 74 Accounting Valuation Report
As of June 30, 2023

P: 469.524.0000 | www.grsconsulting.com

November 9, 2023

Board of Trustees
Kentucky Retirement Systems
Perimeter Park West
1260 Louisville Road
Frankfort, KY 40601

Re: GASB No. 74 Reporting – Actuarial Information – Kentucky Employees Retirement System

Dear Members of the Board:

This report provided herein contains certain information for the **Kentucky Employees Retirement System (KERS)** in connection with the Governmental Accounting Standards Board (GASB) Statement No. 74, "Financial Reporting for Postemployment Benefit Plans Other than Pension Plans" for the fiscal year ending June 30, 2023. A separate report will be provided at a later date with additional accounting information determined in accordance with GASB Statement No. 75, "Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions".

The liability calculations presented in this report were performed for the purpose of satisfying the requirements of GASB No. 74 and are not applicable for other purposes, such as determining the plan's funding requirements. The plan's liability for other purposes may produce significantly different results. This report may be provided to parties other than the Board of Trustees of the Kentucky Retirement Systems only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The total OPEB liability, net OPEB liability, and sensitivity information shown in this report are based on an actuarial valuation date of June 30, 2022. The total OPEB liability was rolled-forward from the valuation date to the plan's fiscal year ending June 30, 2023, using generally accepted actuarial principles. GASB No. 74 requires the disclosure of a 10-year history of certain information in the Required Supplementary Information within the annual financial report. The exhibits provided in this report include the applicable information for historical years that were calculated in accordance with this accounting standard. Information disclosed for years prior to June 30, 2017 were prepared by the prior actuary.

Actuarial Assumptions

The Board of Trustees adopted new actuarial assumptions on June 5, 2023. These assumptions are documented in the report titled "2022 Actuarial Experience Study for the Period Ending June 30, 2022". Additionally, the discount rate used to calculate the total OPEB liability increased from 5.72% to 5.94% for the non-hazardous plan and from 5.59% to 5.94% for the hazardous plan (see further discussion on the calculation of the single discount rate later in this letter). The Total OPEB Liability as of June 30, 2023 is determined using these updated assumptions.

5605 North MacArthur Boulevard | Suite 870 | Irving, Texas 75038-2631

Plan Provisions

House Bill 506 passed during the 2023 legislative session and adjusted the minimum required separation period before a retiree may become reemployed to be one month for all circumstances for each System maintained by KPPA. This is a minimal change for members in the hazardous plan, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members and therefore have reflected no fiscal impact to the total OPEB liability of the hazardous plan.

Similarly, this is a relatively small change for future retirees in the non-hazardous plan. But as the minimum separation period was previously three months in almost every circumstance, we have assumed that there would be a 1.0% increase in the rate of retirement for each of the first two years a non-hazardous member becomes retirement eligible under the age of 65, in order to reflect a shift in the retirement pattern. The total OPEB liability as of June 30, 2023 for the non-hazardous plan is determined using these updated benefit provisions.

There were no other plan provision changes that would materially impact the total OPEB liability since June 30, 2022. It is our opinion that these procedures for determining the information contained in these reports are reasonable and appropriate, and comply with applicable requirements under GASB No. 74.

Implicit Employer Subsidy for Non-Medicare Retirees

The fully-insured premiums paid for the Kentucky Employees' Health Plan are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit employer subsidy for the non-Medicare eligible retirees. GASB No. 74 requires that the liability associated with this implicit subsidy be included in the calculation of the Total OPEB Liability.

Single Discount Rate

Single discount rates of 5.94% for the non-hazardous plan and 5.94% for the hazardous plan were used to measure the total OPEB liability for the fiscal year ending June 30, 2023. They are based on the expected rate of return on OPEB plan investments of 6.50% and a municipal bond rate of 3.86%, as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2023.

Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the plan's fiduciary net position and future contributions were projected to be sufficient to finance the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on insurance plan investments was applied to all periods of the projected benefit payments paid from the retirement system. However, the cost associated with the implicit employer subsidy is not currently being included in the calculation of the plan's actuarial determined contributions, and it is our understanding that any cost associated with the implicit subsidy will not be paid out of the plan's trust. Therefore, the municipal bond rate was applied to future expected benefit payments associated with the implicit subsidy.

The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Future contributions are projected assuming that the entire actuarially determined employer contribution is received by each plan each future year, calculated in accordance with the current funding policy.

401(h) Subaccount

Based on guidance issued by GASB in connection with GASB Statement No. 74, the 1% of pay member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered an OPEB asset. As a result, the reported fiduciary net position includes these 401(h) assets. Additionally, these member contributions and associated investment income and administrative expenses are included in the reconciliation of the fiduciary net position.

Additional Disclosures

This report is based upon information, furnished to us by the Kentucky Public Pensions Authority (KPPA), which includes benefit provisions, membership information, and financial data. We did not audit this data and information, but we did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KPPA. Please see the "Actuarial Valuation Report as of June 30, 2022" and the "2022 Actuarial Experience Study for the Period Ending June 30, 2022" for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for the fiscal year ending June 30, 2023.

To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

Gabriel Roeder Smith & Company

Daniel J. White, FSA, EA, MAAA
Senior Consultant and Actuary

Janie Shaw, ASA, EA, MAAA
Consultant and Actuary

Krysti Kiesel, ASA, MAAA
Consultant and Actuary

Table of Contents

SECTION 1

EXHIBIT 1a

Schedule of the Employers' Net OPEB Liability – KERS Non-Hazardous Plan

($ in thousands)

Year (1)	Total OPEB Liability (2)	Plan Fiduciary Net Position (3)	Net OPEB Liability/(Asset) (4) = (2) - (3)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability (5) = (3) / (2)	Covered Employee Payroll[1] (6)	Net OPEB Liability as a Percentage of Covered Employee Payroll (7) = (4) / (6)
2023	$ 2,317,344	$ 1,532,752	$ 784,592	66.14%	$ 1,653,492	47.45%
2022	3,576,530	1,364,419	2,212,111	38.15%	1,437,132	153.93%
2021	3,698,804	1,419,477	2,279,327	38.38%	1,452,345	156.94%
2020	3,599,557	1,060,649	2,538,908	29.47%	1,482,431	171.27%
2019	3,217,985	995,089	2,222,896	30.92%	1,515,953	146.63%
2018	3,262,117	891,205	2,370,912	27.32%	1,573,898	150.64%
2017	3,353,332	817,370	2,535,962	24.37%	1,593,097	159.18%

Note:

[1] Based on derived compensation using the provided employer contribution information.

EXHIBIT 1b

Schedule of the Employers' Net OPEB Liability – KERS Hazardous Plan

($ in thousands)

Year (1)	Total OPEB Liability (2)	Plan Fiduciary Net Position (3)	Net OPEB Liability/(Asset) (4) = (2) - (3)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability (5) = (3) / (2)	Covered Employee Payroll[1] (6)	Net OPEB Liability as a Percentage of Covered Employee Payroll (7) = (4) / (6)
2023	$ 417,361	$ 625,356	$ (207,995)	149.84%	$ 223,922	-92.89%
2022	595,789	588,162	7,627	98.72%	188,648	4.04%
2021	622,152	633,677	(11,525)	101.85%	172,725	-6.67%
2020	564,524	521,755	42,769	92.42%	182,209	23.47%
2019	507,204	534,053	(26,849)	105.29%	151,448	-17.73%
2018	485,904	519,072	(33,168)	106.83%	190,317	-17.43%
2017	494,869	488,838	6,031	98.78%	171,087	3.53%

Note:

[1] Based on derived compensation using the provided employer contribution information. For 2021, 2022, and 2023, derived compensation based on pension contribution information, as there were no required employer contributions for the insurance fund for FYE2021, FYE2022, and FYE2023.

EXHIBIT 2

Development of Single Discount Rate

	KERS Non-Hazardous	KERS Hazardous
Single Discount Rate	5.94%	5.94%
Long-Term Expected Rate of Return	6.50%	6.50%
Long-Term Municipal Bond Rate[1]	3.86%	3.86%

Notes:

[1] Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2023.

EXHIBIT 3a

Schedule of the Employers' Net OPEB Liability – KERS Non-Hazardous Plan

($ in thousands)

Change in the Net OPEB Liability	2023	2022	2021	2020	2019	2018	2017
Total OPEB liability							
Service Cost	$ 43,199	$ 62,548	$ 58,831	$ 59,600	$ 61,345	$ 66,360	$ 46,992
Interest on the total OPEB liability	200,910	190,531	191,624	179,811	186,820	191,178	192,911
Benefit Changes	3,209	21,884	1,382	0	0	1,865	0
Difference between actual and expected experience	(1,440,201)	(37,249)	(231,631)	288,235	(302,189)	(191,147)	(3,921)
Assumption Changes	61,925	(206,907)	220,184	13,767	158,004	(11,235)	414,835
Benefit Payments[1,2]	(128,228)	(153,081)	(141,143)	(159,841)	(148,112)	(148,236)	(139,601)
Net Change in Total OPEB Liability	(1,259,186)	(122,274)	99,247	381,572	(44,132)	(91,215)	511,216
Total OPEB Liability - Beginning	**$ 3,576,530**	**$ 3,698,804**	**$ 3,599,557**	**$ 3,217,985**	**$ 3,262,117**	**$ 3,353,332**	**$ 2,842,116**
Total OPEB Liability - Ending (a)	**$ 2,317,344**	**$ 3,576,530**	**$ 3,698,804**	**$ 3,599,557**	**$ 3,217,985**	**$ 3,262,117**	**$ 3,353,332**
Plan Fiduciary Net Position							
Contributions - Employer[2]	$ 156,543	$ 181,294 [5]	$ 223,661 [5]	$ 208,300	$ 201,155	$ 152,985	$ 162,636
Contributions - Member	8,358	6,547	6,318	6,128	5,963	5,786	5,156
Benefit Payments[1,2]	(128,228)	(153,081)	(141,143)	(159,841)	(148,112)	(148,236)	(139,601)
OPEB Plan Net Investment Income	132,431	(88,998)	270,811	11,820	45,749	64,028	94,239
OPEB Plan Administrative Expense	(771)	(820)	(819)	(847)	(875)	(760)	(861)
Other	0	0	0	0	4 [4]	32 [4]	0
Net Change in Plan Fiduciary Net Position	168,333	(55,058)	358,828	65,560	103,884	73,835	121,569
Plan Fiduciary Net Position - Beginning	**$ 1,364,419**	**$ 1,419,477**	**$ 1,060,649**	**$ 995,089**	**$ 891,205**	**$ 817,370**	**$ 695,801**
Plan Fiduciary Net Position - Ending (b)	**$ 1,532,752**	**$ 1,364,419**	**$ 1,419,477**	**$ 1,060,649**	**$ 995,089**	**$ 891,205**	**$ 817,370**
Net OPEB Liability - Ending (a) - (b)	**784,592**	**2,212,111**	**2,279,327**	**2,538,908**	**2,222,896**	**2,370,912**	**2,535,962**
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	66.14%	38.15%	38.38%	29.47%	30.92%	27.32%	24.37%
Covered Employee Payroll[3]	$ 1,653,492	$ 1,437,132	$ 1,452,345	$ 1,482,431	$ 1,515,953	$ 1,573,898	$ 1,593,097
Net OPEB Liability as a Percentage of Covered Employee Payroll	47.45%	153.93%	156.94%	171.27%	146.63%	150.64%	159.18%

Notes:

1 Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

2 Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to $27,435,836 for fiscal year 2023.

3 Based on derived compensation using the provided employer contribution information.

4 Northern Trust Settlement

5 Includes $2.4 million and $28.4 million employer cessation contribution for fiscal years 2022 and 2021, respectively

EXHIBIT 3b

Schedule of the Employers' Net OPEB Liability – KERS Hazardous Plan

($ in thousands)

Change in the Net OPEB Liability	2023	2022	2021	2020	2019	2018	2017
Total OPEB liability							
Service Cost	$ 9,435	$ 14,474	$ 13,633	$ 11,548	$ 12,337	$ 12,893	$ 8,002
Interest on the total OPEB liability	32,737	30,599	29,254	28,101	27,990	28,500	27,591
Benefit Changes	0	10,289	48	0	0	167	0
Difference between actual and expected experience	(198,459)	(12,515)	(6,402)	27,668	(30,947)	(31,240)	(1,029)
Assumption Changes	(1,820)	(46,406)	42,022	11,428	31,687	(581)	89,401
Benefit Payments[1,2]	(20,321)	(22,804)	(20,927)	(21,425)	(19,767)	(18,704)	(16,618)
Net Change in Total OPEB Liability	(178,428)	(26,363)	57,628	57,320	21,300	(8,965)	107,347
Total OPEB Liability - Beginning	**$ 595,789**	**$ 622,152**	**$ 564,524**	**$ 507,204**	**$ 485,904**	**$ 494,869**	**$ 387,522**
Total OPEB Liability - Ending (a)	**$ 417,361**	**$ 595,789**	**$ 622,152**	**$ 564,524**	**$ 507,204**	**$ 485,904**	**$ 494,869**
Plan Fiduciary Net Position							
Contributions - Employer[2]	$ 2,282	$ 4,116	$ 3,556	$ 7,441	$ 5,556	$ 5,165	$ 4,579
Contributions - Member	1,584	1,227	1,167	1,105	934	909	811
Benefit Payments[1,2]	(20,321)	(22,804)	(20,927)	(21,425)	(19,767)	(18,704)	(16,618)
OPEB Plan Net Investment Income	53,772	(27,929)	128,244	704	28,373	42,950	59,614
OPEB Plan Administrative Expense	(123)	(125)	(118)	(123)	(117)	(104)	(105)
Other	0	0	0	0	2 [4]	18 [4]	0
Net Change in Plan Fiduciary Net Position	37,194	(45,515)	111,922	(12,298)	14,981	30,234	48,281
Plan Fiduciary Net Position - Beginning	**$ 588,162**	**$ 633,677**	**$ 521,755**	**$ 534,053**	**$ 519,072**	**$ 488,838**	**$ 440,557**
Plan Fiduciary Net Position - Ending (b)	**$ 625,356**	**$ 588,162**	**$ 633,677**	**$ 521,755**	**$ 534,053**	**$ 519,072**	**$ 488,838**
Net OPEB Liability - Ending (a) - (b)	**(207,995)**	**7,627**	**(11,525)**	**42,769**	**(26,849)**	**(33,168)**	**6,031**
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	149.84%	98.72%	101.85%	92.42%	105.29%	106.83%	98.78%
Covered Employee Payroll[3]	$ 223,922	$ 188,648	$ 172,725	$ 182,209	$ 151,448	$ 190,317	$ 171,087
Net OPEB Liability as a Percentage of Covered Employee Payroll	-92.89%	4.04%	-6.67%	23.47%	-17.73%	-17.43%	3.53%

Notes:

1 Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

2 Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to $792,418 for fiscal year 2023.

3 Based on derived compensation using the provided employer contribution information. For 2021, 2022, and 2023, derived compensation based on pension contribution information, as there were no required employer contributions for the insurance fund for FYE2021, FYE2022, and FYE2023.

4 Northern Trust Settlement

EXHIBIT 4a

Schedule of Employers' Contributions – KERS Non-Hazardous Plan

($ in thousands)

Fiscal Year Ending[1]	Actuarially Determined Contribution[2]	Total Employer Contributions[3]	Contribution Deficiency (Excess)	Covered Employee Payroll[4]	Actual Contributions as a Percentage of Covered Payroll
2023	$ 123,952	$ 129,108	$ (5,156)	$ 1,653,492	7.81%
2022	135,809	140,694	(4,885)	1,437,132	9.79%
2021	161,936	186,676	(24,740)	1,452,345	12.85%
2020	183,821	175,006	8,815	1,482,431	11.81%
2019	187,978	178,964	9,014	1,515,953	11.81%
2018	132,365	136,419	(4,054)	1,573,898	8.67%
2017	133,024	152,356	(19,332)	1,593,097	9.56%
2016	121,899	135,816	(13,917)	1,529,249	8.88%
2015	130,455	135,940	(5,485)	1,544,234	8.80%
2014	208,881	166,610	42,271	1,577,496	10.56%

Notes:

[1] Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

[2] Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021 actuarial valuation.

[3] Employer contributions do not include the expected implicit subsidy included in exhibit 3.

[4] Based on derived compensation using the provided employer contribution information.

EXHIBIT 4b

Schedule of Employers' Contributions – KERS Hazardous Plan

($ in thousands)

Fiscal Year Ending[1]	Actuarially Determined Contribution[2]	Total Employer Contributions[3]	Contribution Deficiency (Excess)	Covered Employee Payroll[4]	Actual Contributions as a Percentage of Covered Payroll
2023	$ 0	$ 1,489	$ (1,489)	$ 223,922	0.66%
2022	0	1,281	(1,281)	188,648	0.68%
2021	0	1,300	(1,300)	172,725	0.75%
2020	4,482	5,776	(1,294)	182,209	3.17%
2019	3,726	4,970	(1,244)	151,448	3.28%
2018	2,550	5,288	(2,738)	190,317	2.78%
2017	4,688	5,620	(932)	171,087	3.28%
2016	9,186	16,766	(7,580)	147,563	11.36%
2015	13,152	14,882	(1,730)	128,680	11.57%
2014	15,627	23,874	(8,247)	129,076	18.50%

Notes:

[1] Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

[2] Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021 actuarial valuation.

[3] Employer contributions do not include the expected implicit subsidy included in exhibit 3.

[4] Based on derived compensation using the provided employer contribution information. For 2021, 2022, and 2023, derived compensation based on pension contribution information, as there were no required employer contributions for the insurance fund for FYE2021, FYE2022, and FYE2023.

Notes to Schedule of Employers' Contributions for FYE 2023

The actuarially determined contributions effective for fiscal year ending 2023 that are documented in the schedule on the previous pages were calculated as of June 30, 2021. Based on the June 30, 2021 actuarial valuation report, the actuarial methods and assumptions used to calculate these contributions are below:

Item	KERS Non-Hazardous	KERS Hazardous
Determine by the Actuarial Valuation as of:	June 30, 2021	June 30, 2021
Actuarial Cost Method:	Entry Age Normal	Entry Age Normal
Asset Valuation Method:	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay	Level Percent of Pay
Amortization Period:	30-year closed period at June 30, 2019 *Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases*	30-year closed period at June 30, 2019 *Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases*
Payroll Growth Rate:	0.00%	0.00%
Investment Return:	6.25%	6.25%
Inflation:	2.30%	2.30%
Salary Increases:	3.30% to 15.30%, varies by service	3.55% to 20.05%, varies by service
Mortality:	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.
Healthcare Trend Rates: Pre-65	Initial trend starting at 6.30% at January 1, 2023, gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023, gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.
Post-65	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.

EXHIBIT 5a

Sensitivity of the Net OPEB Liability to Changes in the Discount Rate and Healthcare Trend Rate
KERS Non-Hazardous Plan

($ in thousands)

Table 1. Sensitivity of the Net OPEB Liability to Changes in the Discount Rate

1.00% Decrease, 4.94%	Current Discount Rate, 5.94%	1.00% Increase, 6.94%
$ 1,055,209	$ 784,592	$ 557,024

Table 2. Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rate

1.00% Decrease	Current Healthcare Cost Trend Rate	1.00% Increase
$ 575,159	$ 784,592	$ 1,038,116

EXHIBIT 5b

Sensitivity of the Net OPEB Liability to Changes in the Discount Rate and Healthcare Trend Rate
KERS Hazardous Plan
($ in thousands)

Table 1. Sensitivity of the Net OPEB Liability to Changes in the Discount Rate

1.00% Decrease, 4.94%	Current Discount Rate, 5.94%	1.00% Increase, 6.94%
$ (155,851)	$ (207,995)	$ (251,094)

Table 2. Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rate

1.00% Decrease	Current Healthcare Cost Trend Rate	1.00% Increase
$ (239,711)	$ (207,995)	$ (169,294)

APPENDIX 1

Appendix 1

Development of Baseline Claims Cost

For non-Medicare retirees, the initial per capita costs were developed using retiree claims experience for calendar years 2020 through 2022. The claims were projected on an incurred claim basis, adjusted for prescription drug rebates, and loaded for administrative expense. The per capita costs shown in the table below also include HRA contributions for retirees on the CDHP plans. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. The fully-insured premiums paid to the Kentucky Employees' Health Plan are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit employer subsidy for the non-Medicare eligible retirees.

For Medicare retirees, the initial per capita costs were estimated based on the plan premiums effective January 1, 2023, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees.

Age graded and sex distinct premiums are utilized by this valuation. These costs are appropriate for the unique age and sex distribution currently existing. Over the future years covered by this valuation, the age and sex distribution will most likely change. Therefore, our process "distributes" the average premium over all age/sex combinations and assigns a unique premium for each combination. The age/sex specific costs more accurately reflect the health care utilization and cost at that age.

For Those Not Eligible for Medicare (as of January 1, 2023)		
Age	Male	Female
40	$373.36	$606.68
50	605.22	745.56
60	1,028.58	1,012.80
64	1,250.79	1,180.40

For Those Eligible for Medicare (as of January 1, 2023)		
Age	Male	Female
65	$78.14	$73.71
75	91.43	89.21
85	96.68	97.82

Blake Orth is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Blake Orth

Blake Orth, FSA, EA, MAAA

State Police Retirement System

GASB No. 74 Accounting Valuation Report

As of June 30, 2023

P: 469.524.0000 | www.grsconsulting.com

September 27, 2023

Board of Trustees
Kentucky Retirement Systems
Perimeter Park West
1260 Louisville Road
Frankfort, KY 40601

Re: GASB No. 74 Reporting – Actuarial Information – State Police Retirement System

Dear Members of the Board:

This report provided herein contains certain information for the **State Police Retirement System (SPRS)** in connection with the Governmental Accounting Standards Board (GASB) Statement No. 74, "Financial Reporting for Postemployment Benefit Plans Other than Pension Plans" for the fiscal year ending June 30, 2023. A separate report will be provided at a later date with additional accounting information determined in accordance with GASB Statement No. 75, "Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions".

The liability calculations presented in this report were performed for the purpose of satisfying the requirements of GASB No. 74 and are not applicable for other purposes, such as determining the plan's funding requirements. The plan's liability for other purposes may produce significantly different results. This report may be provided to parties other than the Board of Trustees of the Kentucky Retirement Systems only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The total OPEB liability, net OPEB liability, and sensitivity information shown in this report are based on an actuarial valuation date of June 30, 2022. The total OPEB liability was rolled-forward from the valuation date to the plan's fiscal year ending June 30, 2023, using generally accepted actuarial principles. GASB No. 74 requires the disclosure of a 10-year history of certain information in the Required Supplementary Information within the annual financial report. The exhibits provided in this report include the applicable information for historical years that were calculated in accordance with this accounting standard. Information disclosed for years prior to June 30, 2017 were prepared by the prior actuary.

Actuarial Assumptions

The Board of Trustees adopted new actuarial assumptions on June 5, 2023. These assumptions are documented in the report titled "2022 Actuarial Experience Study for the Period Ending June 30, 2022". Additionally, the discount rate used to calculate the total OPEB liability increased from 5.69% to 6.02% (see further discussion on the calculation of the single discount rate later in this letter). The Total OPEB Liability as of June 30, 2023 is determined using these updated assumptions.

5605 North MacArthur Boulevard | Suite 870 | Irving, Texas 75038-2631

Board of Trustees
September 27, 2023
Page 2

Plan Provisions

House Bill 506 passed during the 2023 legislative session and adjusted the minimum required separation period before a retiree may become reemployed to be one month for all circumstances for each System maintained by KPPA. This is a minimal change for members in SPRS, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members and therefore have reflected no fiscal impact to the total OPEB liability.

There were no other plan provision changes that would materially impact the total OPEB liability since June 30, 2022. It is our opinion that these procedures for determining the information contained in these reports are reasonable and appropriate, and comply with applicable requirements under GASB No. 74.

Implicit Employer Subsidy for Non-Medicare Retirees

The fully-insured premiums paid for the Kentucky Employees' Health Plan are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit employer subsidy for the non-Medicare eligible retirees. GASB No. 74 requires that the liability associated with this implicit subsidy be included in the calculation of the Total OPEB Liability.

Single Discount Rate

A single discount rate of 6.02% was used to measure the total OPEB liability for the fiscal year ending June 30, 2023. It is based on the expected rate of return on OPEB plan investments of 6.50% and a municipal bond rate of 3.86%, as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2023.

Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the plan's fiduciary net position and future contributions were projected to be sufficient to finance the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on insurance plan investments was applied to all periods of the projected benefit payments paid from the retirement system. However, the cost associated with the implicit employer subsidy is not currently being included in the calculation of the plan's actuarial determined contributions, and it is our understanding that any cost associated with the implicit subsidy will not be paid out of the plan's trust. Therefore, the municipal bond rate was applied to future expected benefit payments associated with the implicit subsidy.

The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Future contributions are projected assuming that the entire actuarially determined employer contribution is received by each plan each future year, calculated in accordance with the current funding policy.

Board of Trustees
September 27, 2023
Page 3

401(h) Subaccount

Based on guidance issued by GASB in connection with GASB Statement No. 74, the 1% of pay member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered an OPEB asset. As a result, the reported fiduciary net position includes these 401(h) assets. Additionally, these member contributions and associated investment income and administrative expenses are included in the reconciliation of the fiduciary net position.

Additional Disclosures

This report is based upon information, furnished to us by the Kentucky Public Pensions Authority (KPPA), which includes benefit provisions, membership information, and financial data. We did not audit this data and information, but we did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KPPA. Please see the "Actuarial Valuation Report as of June 30, 2022" and the "2022 Actuarial Experience Study for the Period Ending June 30, 2022" for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for the fiscal year ending June 30, 2023.

To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

Gabriel Roeder Smith & Co.

Daniel J. White, FSA, EA, MAAA
Senior Consultant and Actuary

Janie Shaw, ASA, EA, MAAA
Consultant and Actuary

Krysti Kiesel, ASA, MAAA
Senior Analyst and Actuary

Table of Contents

SECTION 1

EXHIBIT 1

Schedule of the Employers' Net OPEB Liability

($ in thousands)

Year (1)	Total OPEB Liability (2)	Plan Fiduciary Net Position (3)	Net OPEB Liability/(Asset) (4) = (2) - (3)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability (5) = (3) / (2)	Covered Employee Payroll[1] (6)	Net OPEB Liability as a Percentage of Covered Employee Payroll (7) = (4) / (6)
2023	$ 263,450	$ 248,109	$ 15,341	94.18%	$ 65,830	23.30%
2022	351,453	231,242	120,211	65.80%	48,600	247.35%
2021	364,899	247,318	117,581	67.78%	47,155	249.35%
2020	339,942	201,340	138,602	59.23%	48,231	287.37%
2019	312,553	201,206	111,347	64.38%	48,780	228.26%
2018	301,012	190,847	110,165	63.40%	50,064	220.05%
2017	313,234	178,838	134,396	57.09%	48,873	274.99%

Note:

[1] Based on derived compensation using the provided employer contribution information.

EXHIBIT 2

Development of Single Discount Rate

	SPRS
Single Discount Rate	6.02%
Long-Term Expected Rate of Return	6.50%
Long-Term Municipal Bond Rate[1]	3.86%

Notes:

[1] Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2023.

EXHIBIT 3

Schedule of the Employers' Net OPEB Liability

($ in thousands)

Change in the Net OPEB Liability	2023	2022	2021	2020	2019	2018	2017
Total OPEB liability							
Service Cost	$ 4,092	$ 5,605	$ 5,218	$ 5,389	$ 4,816	$ 6,087	$ 4,147
Interest on the total OPEB liability	19,608	18,592	17,984	17,600	17,724	18,432	17,993
Benefit Changes	0	4,975	101	0	0	34	0
Difference between actual and expected experience	(98,425)	(5,952)	(6,318)	13,810	(14,295)	(23,320)	(573)
Assumption Changes	404	(21,937)	21,784	4,578	16,483	(358)	57,312
Benefit Payments[1,2]	(13,682)	(14,729)	(13,812)	(13,988)	(13,187)	(13,097)	(12,123)
Net Change in Total OPEB Liability	(88,003)	(13,446)	24,957	27,389	11,541	(12,222)	66,756
Total OPEB Liability - Beginning	**$ 351,453**	**$ 364,899**	**$ 339,942**	**$ 312,553**	**$ 301,012**	**$ 313,234**	**$ 246,478**
Total OPEB Liability - Ending (a)	**$ 263,450**	**$ 351,453**	**$ 364,899**	**$ 339,942**	**$ 312,553**	**$ 301,012**	**$ 313,234**
Plan Fiduciary Net Position							
Contributions - Employer[2]	$ 8,755	$ 9,343	$ 9,381	$ 12,873	$ 12,623	$ 8,535	$ 7,862
Contributions - Member	348	230	209	196	176	155	131
Benefit Payments[1,2]	(13,682)	(14,729)	(13,812)	(13,988)	(13,187)	(13,097)	(12,123)
OPEB Plan Net Investment Income	21,520	(10,847)	50,289	1,124	10,815	16,470	21,627
OPEB Plan Administrative Expense	(74)	(73)	(89)	(71)	(69)	(62)	(66)
Other	0	0	0	0	1 [4]	8 [4]	0
Net Change in Plan Fiduciary Net Position	16,867	(16,076)	45,978	134	10,359	12,009	17,431
Plan Fiduciary Net Position - Beginning	**$ 231,242**	**$ 247,318**	**$ 201,340**	**$ 201,206**	**$ 190,847**	**$ 178,838**	**$ 161,407**
Plan Fiduciary Net Position - Ending (b)	**$ 248,109**	**$ 231,242**	**$ 247,318**	**$ 201,340**	**$ 201,206**	**$ 190,847**	**$ 178,838**
Net OPEB Liability - Ending (a) - (b)	**15,341**	**120,211**	**117,581**	**138,602**	**111,347**	**110,165**	**134,396**
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	94.18%	65.80%	67.78%	59.23%	64.38%	63.40%	57.09%
Covered Employee Payroll[3]	$ 65,830	$ 48,600	$ 47,155	$ 48,231	$ 48,780	$ 50,064	$ 48,873
Net OPEB Liability as a Percentage of Covered Employee Payroll	23.30%	247.35%	249.35%	287.37%	228.26%	220.05%	274.99%

Notes:

[1] Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

[2] Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to -$533,552 for fiscal year 2023.

[3] Based on derived compensation using the provided employer contribution information.

[4] Northern Trust Settlement

EXHIBIT 4

Schedule of Employers' Contributions

($ in thousands)

Fiscal Year Ending[1]	Actuarially Determined Contribution[2]	Total Employer Contributions[3]	Contribution Deficiency (Excess)	Covered Employee Payroll[4]	Actual Contributions as a Percentage of Covered Payroll
2023	$ 9,289	$ 9,289	$ 0	$ 65,830	14.11%
2022	8,782	8,782	0	48,600	18.07%
2021	9,285	9,285	0	47,155	19.69%
2020	13,133	13,133	0	48,231	27.23%
2019	13,283	13,288	(5)	48,780	27.24%
2018	9,062	9,397	(335)	50,064	18.77%
2017	9,222	9,222	0	48,873	18.87%
2016	8,553	10,237	(1,684)	45,551	22.47%
2015	9,890	10,382	(492)	45,765	22.69%
2014	20,879	14,493	6,386	44,616	32.48%

Notes:

[1] Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

[2] Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021 actuarial valuation.

[3] Employer contributions do not include the expected implicit subsidy included in exhibit 3.

[4] Based on derived compensation using the provided employer contribution information.

Notes to Schedule of Employers' Contributions for FYE 2023

The actuarially determined contribution effective for fiscal year ending 2023 that is documented in the schedule on the previous page was calculated as of June 30, 2021. Based on the June 30, 2021 actuarial valuation report, the actuarial methods and assumptions used to calculate the contribution are below:

Item	SPRS
Determine by the Actuarial Valuation as of:	June 30, 2021
Actuarial Cost Method:	Entry Age Normal
Asset Valuation Method:	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay
Amortization Period:	30-year closed period at June 30, 2019 *Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases*
Payroll Growth Rate:	0.00%
Investment Return:	6.25%
Inflation:	2.30%
Salary Increases:	3.55% to 16.05%, varies by service
Mortality:	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.
Healthcare Trend Rates: Pre-65	Initial trend starting at 6.30% at January 1, 2023, gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.
Post-65	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.

EXHIBIT 5

Sensitivity of the Net OPEB Liability to Changes in the Discount Rate and Healthcare Trend Rate

($ in thousands)

Table 1. Sensitivity of the Net OPEB Liability to Changes in the Discount Rate

1.00% Decrease, 5.02%	Current Discount Rate, 6.02%	1.00% Increase, 7.02%
$ 45,363	$ 15,341	$ (9,776)

Table 2. Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rate

1.00% Decrease	Current Healthcare Cost Trend Rate	1.00% Increase
$ (5,320)	$ 15,341	$ 40,029

APPENDIX 1

Appendix 1

Development of Baseline Claims Cost

For non-Medicare retirees, the initial per capita costs were developed using retiree claims experience for calendar years 2020 through 2022. The claims were projected on an incurred claim basis, adjusted for prescription drug rebates, and loaded for administrative expense. The per capita costs shown in the table below also include HRA contributions for retirees on the CDHP plans. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. The fully-insured premiums paid to the Kentucky Employees' Health Plan are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit employer subsidy for the non-Medicare eligible retirees.

For Medicare retirees, the initial per capita costs were estimated based on the plan premiums effective January 1, 2023, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees.

Age graded and sex distinct premiums are utilized by this valuation. These costs are appropriate for the unique age and sex distribution currently existing. Over the future years covered by this valuation, the age and sex distribution will most likely change. Therefore, our process "distributes" the average premium over all age/sex combinations and assigns a unique premium for each combination. The age/sex specific costs more accurately reflect the health care utilization and cost at that age.

For Those Not Eligible for Medicare (as of January 1, 2023)		
Age	Male	Female
40	$373.36	$606.68
50	605.22	745.56
60	1,028.58	1,012.80
64	1,250.79	1,180.40

For Those Eligible for Medicare (as of January 1, 2023)		
Age	Male	Female
65	$78.14	$73.71
75	91.43	89.21
85	96.68	97.82

Blake Orth is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Blake Orth

Blake Orth, FSA, EA, MAAA

F-14 (Revised 6/2021)

Record of Control Weakness or Noncompliance

For APA Use Only:

Agency	Kentucky Public Pensions Authority
Audit Section	Investments
Test Workpaper Reference	I02a
Finding Reference #	*2023-KPPA-001*
Known Questioned Costs	*0*
Likely Questioned Costs	*0*

Condition and Context (Nature of the Weakness or Noncompliance)

The Kentucky Public Pensions Authority (KPPA) investment accounting branch performs reconciliations of investment activity recorded between their custodian, Bank of New York Mellon (BNYM), and their accounting system, Great Plains (GP). While the reconciliations occurred, the reconciliation documentation only had the typed names of the preparer and reviewer and there were no indicators of when the reconciliation occurred. Beginning in July 2023, KPPA updated their internal control process to address this issue.

Cause

KPPA did not design the internal controls to ensure investment reconciliations appropriately documented the time of the reconciliation and to prevent the rollforward of the preparer and reviewer names.

Effect

Properly documented approvals are effective internal controls to prevent and to detect and correct potential misstatements with regards to investment reconciliations. Misstatements in the reconciliation process may occur when approvals are rolled forward on a document and the time of the reconciliation is not documented.

Criteria

Sound internal controls over the investment reconciliation process ensure the investment balances recorded in the accounting system contain complete and accurate information for financial reporting. A complete and accurate reconciliation of investment activity is necessary in order to ensure financial statement reporting requirements are met in accordance with Generally Accepted Accounting Principles (GAAP) and Governmental Accounting Standards Board (GASB) pronouncements.

Recommendation

As noted above, KPPA updated their investment reconciliation processes for FY 2024. We recommend KPPA review those processes to ensure sufficient evidence of proper approvals were documented in the investment reconciliation process.

F-14 (Revised 6/2021)

Record of Control Weakness or Noncompliance

NOTE TO RESPONDENT:

Please provide management's response and planned corrective action with all the required elements using the format below.

Corrective Action Plans
2 CFR 200, Subpart F, § 511(c) (Uniform Guidance) requires the auditee to prepare a Corrective Action Plan (CAP).

Based on the Uniform Guidance:
- §200.26 defines corrective action as "action taken by the auditee that: (a) Corrects identified deficiencies; (b) Produces recommended improvements; or (c) Demonstrates that audit findings are either invalid or do not warrant auditee action."
- The CAP should address both federal audit findings and all findings related to the financial statements which are required to be reported in accordance with *Government Auditing Standards* included in the current year auditor's report.
- The CAP must provide the name(s) of the contact person(s) responsible for corrective action, the corrective action planned, and the anticipated completion date.
- If the auditee does not agree with the audit findings or believes corrective action is not required, then the corrective action plan must include an explanation and specific reasons.

Other Requirements
KRS 43.090 requires your agency to notify the Legislative Research Commission and the Auditor of Public Accounts of the audit recommendations that have been implemented and of the audit recommendations that have not been implemented within 60 days of the completion of the final audit report. For any recommendations that have not been implemented, a reason for failure to implement audit recommendations must also be provided.

Management's Response and Planned Corrective Action
Finding Reference # 2023-KPPA-001

To be completed by the responding agency:

Response prepared by:	Connie Davis
Note: The APA is requesting the official response of the agency's management. It is the responsibility of the preparer to ensure all internal approvals of the response have been obtained.	
Person responsible for corrective action:	Connie Davis
Date response prepared:	November 14, 2023
Estimated corrective action completion date:	Completed

<u>Management's Response and Planned Corrective Action</u>:

We concur with the finding and have updated procedures to ensure the proper oversight is documented.

F-14 (Revised 6/2021)

Record of Control Weakness or Noncompliance

For APA Use Only:

Agency	Kentucky Public Pensions Authority
Audit Section	Expenditures
Test Workpaper Reference	D05.02a
Finding Reference #	*2023-KPPA-002*
Known Questioned Costs	*$0*
Likely Questioned Costs	*$0*

Condition and Context (Nature of the Weakness or Noncompliance)

The Kentucky Public Pensions Authority (KPPA) manages multiple pension and health plans, including the County Employees Retirement System (CERS) hazardous and nonhazardous and the Kentucky Employees Retirement System (KERS) hazardous and nonhazardous plans. KPPA pays a monthly healthcare premium subsidy to Humana and the Department of Employee Insurance (DEI) for retired members. KPPA cash management branch sets up and requests wire transfers from the custodian bank accounts to the trust fund cash clearing accounts to cover the monthly insurance premium obligations for Humana and DEI. The healthcare premium subsidy and wire amounts appear on KPPA reports. The wire transfer requests and reports were reviewed and the following discrepancies noted:

- During May 2023, the KERS nonhazardous insurance account transferred $2,419,507 and the CERS nonhazardous insurance account transferred $1,924,760, as requested; however, the accounts were inadvertently switched on the request. Thus, the funds were transferred to the incorrect accounts resulting in KERS nonhazardous insurance being overcharged and CERS nonhazardous insurance being undercharged by $494,747.
- During April 2023, the calculation of the subsidy amount used in the calculation of the insurance amount to be transferred totaled $398. This amount was switched between the KERS nonhazardous and KERS hazardous, resulting in KERS nonhazardous being overcharged and KERS hazardous being undercharged by $398.
- During October 2022, the KERS nonhazardous insurance account transferred $5,033,988 but should have transferred $5,033,958, an overcharge of $30. The KERS nonhazardous pension account was undercharged $30 having transferred $1,636,185 when it should have been $1,636,215.

In addition to the errors identified above, the same employee creating the breakout of the different wire amounts was also responsible for approving the wires once they were set up in the custodial bank's system.

Cause

KPPA's internal controls over the wire transfers did not identify errors and did not prevent a segregation of duties issue between the preparation and review process.

Effect

Incorrect amounts were requested from the custodial bank for one pension plan and several of the insurance plan accounts. The net difference for pension funds indicate an understatement of $30 and the net difference for insurance funds indicate an overstatement of $30 on the financial statements in the benefit payments and healthcare premium subsidy expenditures, respectively. The difference by fund are as follows:

- KERS nonhazardous insurance-overcharged $495,175.

F-14 (Revised 6/2021)

Record of Control Weakness or Noncompliance

- KERS hazardous insurance-undercharged $398.
- CERS nonhazardous insurance-undercharged $494,747.
- KERS nonhazardous pension-undercharged $30.

Failure to segregate duties could lead to undetected errors in the healthcare premium subsidy wire amounts as well as incorrect financial reports.

Criteria

Effective internal controls over wire transfers ensure healthcare premium subsidy transactions contain accurate information for financial reporting and appropriate information for making management decisions.

The objective of segregation of duties is to ensure that assigned duties are separated such that no one employee is in a position both to commit and conceal errors in the normal course of performing their assigned duties. In general, the principal incompatible duties to be segregated are:

- Authorization of transactions,
- Custody of assets,
- Recording or reporting of transactions, and
- Performing reconciliations.

Adequate segregation of duties reduces the likelihood that errors, either intentional or unintentional, will remain undetected. This is carried out by providing for separate processing by different individuals at various stages of a transaction and for independent reviews of the work performed.

Recommendation

We recommend KPPA review the procedures over wire transfers to ensure effective review of wire transactions and adequate segregation of duties.

F-14 (Revised 6/2021)

Record of Control Weakness or Noncompliance

NOTE TO RESPONDENT:

Please provide management's response and planned corrective action with all the required elements using the format below.

Corrective Action Plans
2 CFR 200, Subpart F, § 511(c) (Uniform Guidance) requires the auditee to prepare a Corrective Action Plan (CAP).

Based on the Uniform Guidance:

- §200.26 defines corrective action as "action taken by the auditee that: (a) Corrects identified deficiencies; (b) Produces recommended improvements; or (c) Demonstrates that audit findings are either invalid or do not warrant auditee action."
- The CAP should address both federal audit findings and all findings related to the financial statements which are required to be reported in accordance with *Government Auditing Standards* included in the current year auditor's report.
- The CAP must provide the name(s) of the contact person(s) responsible for corrective action, the corrective action planned, and the anticipated completion date.
- If the auditee does not agree with the audit findings or believes corrective action is not required, then the corrective action plan must include an explanation and specific reasons.

Other Requirements
KRS 43.090 requires your agency to notify the Legislative Research Commission and the Auditor of Public Accounts of the audit recommendations that have been implemented and of the audit recommendations that have not been implemented within 60 days of the completion of the final audit report. For any recommendations that have not been implemented, a reason for failure to implement audit recommendations must also be provided.

Management's Response and Planned Corrective Action
Finding Reference # 2023-KPPA-002

To be completed by the responding agency:

Response prepared by:	Connie Davis
Note: The APA is requesting the official response of the agency's management. It is the responsibility of the preparer to ensure all internal approvals of the response have been obtained.	
Person responsible for corrective action:	Connie Davis
Date response prepared:	November 14, 2023
Estimated corrective action completion date:	Completed

Management's Response and Planned Corrective Action:

We concur with the finding and have corrected the errors noted above. Procedures have been updated to include a review/approval of all wire transactions before instructions are sent for processing.

MIKE HARMON
AUDITOR OF PUBLIC ACCOUNTS

Keith Peercy, Chairperson
Board of Trustees
Kentucky Public Pension Authority
1260 Louisville Road
Frankfort, KY 40601

We have audited the financial statements of the Kentucky Public Pension Authority (KPPA) as of and for the year ended June 30, 2023 and have issued our report thereon dated November 27, 2023.

Statement on Auditing Standards AU-C 260, *The Auditor's Communication with Those Charged with Governance*, requires us to communicate certain matters to keep those charged with governance adequately informed about matters related to the financial statement audit that are, in our professional judgment, significant and relevant to the responsibilities of those charged with governance in overseeing the financial reporting process. This report summarizes certain matters required by professional standards to be communicated to you in your oversight responsibility over the KPPA financial reporting process.

This information is intended solely for the information and use of the KPPA management, Audit Committee, and the Board of Trustees and is not intended to be and should not be used by anyone other than these specified parties.

Respectfully Submitted,

Farrah Petter, CPA
Assistant Auditor of Public Accounts

November 27, 2023

c: *David Eager, Executive Director*
Rebecca Adkins, Deputy Executive Director

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FRANKFORT, KY 40601-1817
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AUDITOR.KY.GOV

Board of Trustees
Kentucky Public Pension Authority
Page 2

Required Communications

Statement on Auditing Standards AU-C 260 requires the auditor to provide those charged with governance with additional information regarding the scope and results of the audit that may assist them in overseeing management's financial reporting and disclosure process. For purposes of this statement "those charged with governance" means the person(s) with responsibility for overseeing the strategic direction of the entity and the obligations related to the accountability of the entity, which includes overseeing the financial reporting process. We have identified the Kentucky Public Pension Authority Board of Trustees members as individuals charged with governance. As permitted by auditing standards, we are providing communications to a representative of this group of individuals, which we have determined to be the Board Chair, and are also providing copies of the letter to the KPPA's management.

Our Responsibility in Relation to the Financial Statement Audit

As communicated in our engagement letter dated April 11, 2023, our responsibility, as described by professional standards, is to form and express an opinion(s) about whether the financial statements that have been prepared by management with your oversight are presented fairly, in all material respects, in accordance with accounting principles generally accepted in the United States of America. Our audit of the financial statements does not relieve you or management of your respective responsibilities.

Our responsibility, as prescribed by professional standards, is to plan and perform our audit to obtain reasonable, rather than absolute, assurance about whether the financial statements are free of material misstatement. An audit of financial statements includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control over financial reporting. Accordingly, as part of our audit, we considered the internal control of KPPA solely for the purpose of determining our audit procedures and not to provide any assurance concerning such internal control.

We are also responsible for communicating significant matters related to the audit that are, in our professional judgment, relevant to your responsibilities in overseeing the financial reporting process. However, we are not required to design procedures for the purpose of identifying other matters to communicate to you.

We have provided our findings, if any, regarding significant control deficiencies over financial reporting, material weaknesses, material noncompliance, and other matters noted during our audit in a separate letter to you dated November 27, 2023. Additional findings were also communicated in a separate letter to management dated November 27, 2023, which did not rise to level necessary to be disclosed in the audit report but still warranted attention by KPPA.

Board of Trustees
Kentucky Public Pension Authority
Page 3

Our responsibility also includes communicating to you any information which we believe is a material misstatement of fact. Nothing came to our attention that caused us to believe that such information, or its manner of presentation, is materially inconsistent with the information, or manner of its presentation, appearing in the financial statements.

Planned Scope and Timing of the Audit

We conducted our audit consistent with the planned scope and timing we previously communicated to you.

Compliance with All Ethics Requirements Regarding Independence

The engagement team, others in our firm, as appropriate, our firm, and our network firms have complied with all relevant ethical requirements regarding independence.

Significant Risks Identified

We have identified the following significant risks:

- Management's override of controls is a mandatory risk in accordance with auditing standards.
- Improper revenue recognition is a presumed risk of material misstatement in auditing standards.
- Ineffective reconciliations among multiple computer programs is a risk.

Qualitative Aspects of the Entity's Significant Accounting Practices[2]

Significant Accounting Policies

Management has the responsibility to select and use appropriate accounting policies. A summary of the significant accounting policies adopted by KPPA is included in Note A to the financial statements. There have been no initial selection of accounting policies and no changes in significant accounting policies or their application during fiscal year 2023. No matters have come to our attention that would require us, under professional standards, to inform you about (1) the methods used to account for significant unusual transactions and (2) the effect of significant accounting policies in controversial or emerging areas for which there is a lack of authoritative guidance or consensus.

Significant Accounting Estimates

Accounting estimates are an integral part of the financial statements prepared by management and are based on management's current judgments. Those judgments are normally based on knowledge and experience about past and current events and assumptions about future events. Certain accounting estimates are particularly sensitive because of their significance to the financial statements and because of the possibility that future events affecting them may differ markedly from management's current judgments.

The most sensitive accounting estimates affecting the financial statements are:

- Management's estimates related to the fair value of its investments on the Net Asset Value (NAV) of units of the investee. Management's estimate of the NAV is based on the investment manager's NAV since it is a practical resource based on the underlying fair value of investments held by the investee less any liabilities.
- Management's disclosure of the net pension liability in Note M to the financial statements. Management's estimate of the net pension liability is based on KPPA's actuarial valuations and the methods and assumptions used in determining the amounts are disclosed in the notes.
- Management's dosclosure of the net OPEB liability of KPPA in Note M of the financial statements. Management's estimate of the OPEB liability is based on KPPA's actuarial valuations and the methods and assumptions used in determining the amounts are disclosed in the notes.

We evaluated the key factors and assumptions used to develop the NAV, net pension liability, and OPEB liability and determined that it is reasonable in relation to the basic financial statements taken as a whole and in relation to the applicable opinion units.

Financial Statement Disclosures

Certain financial statement disclosures involve significant judgment and are particularly sensitive because of their significance to financial statement users. We believe the financial statement disclosures affecting KPPA's financial statements are sufficient, consistent, and generally acceptable.

Significant Unusual Transactions

For purposes of this communication, professional standards require us to communicate to you significant unusual transactions identified during our audit. No significant unusual transactions were identified as a result of our audit procedures.

Identified or Suspected Fraud

We did not identify or obtain any information that indicates fraud may have occurred or be suspected.

Significant Difficulties Encountered during the Audit

We are required to inform those charged with governance of any significant difficulties encountered during the audit, including significant delays in obtaining information, extensive unexpected effort required to obtain sufficient appropriate audit evidence, the unavailability of expected information, and other matters.

Board of Trustees
Kentucky Public Pension Authority
Page 5

We encountered no significant difficulties in dealing with management relating to the performance of the audit. The employees and management of KPPA provided the auditors with appropriate, timely documentation, and made time available to assist auditors in the performance of audit procedures. The auditors appreciate all of the time and assistance provided to them during the conduct of the audit.

Uncorrected and Corrected Misstatements

For purposes of this communication, professional standards also require us to accumulate all known and likely misstatements identified during the audit, other than those that we believe are trivial, and communicate them to the appropriate level of management. Further, professional standards require us to also communicate the effect of uncorrected misstatements related to prior periods on the relevant classes of transactions, account balances or disclosures, and the financial statements as a whole and each applicable opinion unit. Based on our audit, no misstatements were presented to management for consideration. Uncorrected misstatements or matters underlying those uncorrected misstatements could potentially cause future-period financial statements to be materially misstated, even though the uncorrected misstatements are immaterial to the financial statements currently under audit.

In addition, professional standards require us to communicate to you all material, corrected misstatements that were brought to the attention of management as a result of our audit procedures. There were no material misstatements identified during the audit.

Disagreements with Management

For purposes of this letter, professional standards define a disagreement with management as a matter, whether or not resolved to our satisfaction, concerning a financial accounting, reporting, or auditing matter, which could be significant to KPPA’s financial statements or the auditor’s report. No such disagreements arose during the course of the audit.

Circumstances that Affect the Form and Content of the Auditor’s Report

For purposes of this letter, professional standards require that we communicate any circumstances that affect the form and content of our auditor’s report. There were no circumstances identified that affect the form and content of the auditor’s report.

Representations Requested from Management

We have requested certain written representations from management, which are included in the attached letter dated November 27, 2023.

Management’s Consultations with Other Accountants

Board of Trustees
Kentucky Public Pension Authority
Page 6

In some cases, management may decide to consult with other accountants about auditing and accounting matters. Management informed us that, and to our knowledge, there were no consultations with other accountants regarding auditing and accounting matters.

Other Significant Matters, Findings, or Issues

In the normal course of our professional association with KPPA, we generally discuss a variety of matters, including the application of accounting principles and auditing standards, significant events or transactions that occurred during the year, operating and regulatory conditions affecting the entity, and operational plans and strategies that may affect the risks of material misstatement. None of the matters discussed resulted in a condition to our retention as KPPA's auditors.

Other Information Included in Annual Reports

Pursuant to professional standards, our responsibility as auditors for other information, whether financial or nonfinancial, included in KPPA's annual reports, does not extend beyond the information identified in the audit report, and we are not required to perform any procedures to corroborate such other information. However, in accordance with such standards, we have read the information and considered whether such information, or the manner of its presentation, was materially inconsistent with its presentation in the financial statements.

Our responsibility also includes communicating to you any information which we believe is a material misstatement of fact. Nothing came to our attention that caused us to believe that such information, or its manner of presentation, is materially inconsistent with the information, or manner of its presentation, appearing in the financial statements.

This report is intended solely for the information and use of the management, board of trustees, and others within KPPA and is not intended to be and should not be used by anyone other than these specified parties.

KENTUCKY PUBLIC PENSIONS AUTHORITY
David L. Eager, Executive Director
1260 Louisville Road · Frankfort, Kentucky 40601
kyret.ky.gov · Phone: 502-696-8800 · Fax: 502-696-8822

Kentucky Public Pensions Authority

December 6, 2023

Government Finance Officers Association
203 North LaSalle Street, Suite 2700
Chicago, IL 60601-1210

RE: Certificate of Achievement for Excellence in Financial Reporting
Report #00835

Pursuant to the instructions included in the report referenced above, responses to the comments and suggestions for improvement of Kentucky Public Pensions Authority's (KPPA) Annual Comprehensive Financial Report (ACFR) for the Fiscal Year Ended June 30, 2022, follow:

Comment 102: ***Introductory Section***

The organization chart (or other discussion of the administrative organization) should inform readers of the specific location within the investment section where information can be found regarding investment professionals who provide services to the postemployment benefit system.

Management concurs with the recommendation. The page numbers have been added to the organization chart to inform the readers of the specific location within the investment section where information can be found regarding investment professionals who provide services to the postemployment benefit system.

The transmittal letter should address the system members or pool participants, as well as others (e.g., the governing board).

Management concurs with the recommendation. The transmittal letter addresses the members as well as the governing boards.

Comment 118: Statistical Section

Benefit and refund deductions should present benefits by type (e.g., age and service benefits, disability benefits) in the schedule of changes in net position or in a separate schedule.

Management concurs with the recommendation. For the 2023 ACFR, the Schedule of Benefit Expenses and the Active Refunds schedules present the benefit expenses in the Schedule of Changes in Net Position.

Benefits and refund deductions should present refunds by type (e.g., death, separation) in the schedule of changes in net position or in a separate schedule.

Management concurs with the recommendation. For the 2023 ACFR, the Schedule of Benefit Expenses and the Active Refunds schedules present the benefit and refund reductions in the Schedule of Changes in Net Position.

Should you have any questions regarding our responses, or our ACFR for FYE 2023, please do not hesitate to telephone me directly at (502) 696-8604.

Sincerely,

Rebecca H. Adkins
Executive Director, Office of Operations

Enclosure

cc: David L. Eager
Executive Director

Michael B. Lamb, CPA
Chief Financial Officer

Connie A. Davis, CIA, CGAP, CRMA
Director of Accounting

/ACFR Submission Letter - 2023

KENTUCKY PUBLIC PENSIONS AUTHORITY
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Kentucky Public Pensions Authority

MEMORANDUM

TO: David L. Eager
Executive Director

FROM: Dominique McKinley
Division Director, Enterprise & Technology Services

DATE: November 15, 2023

SUBJECT: Information Security Assessment Summaries

Since 2006, KPPA has contracted with a third party to perform an annual assessment of the security of the KPPA information infrastructure. In August to October timeframe of 2023, Crowe performed an information security assessment that included the following activities:

- External Penetration Assessment: The objective of the External Penetration Assessment was to assess the ability of the KPPA network to resist attacks from external threats. Crowe identified KPPA systems and services that were accessible on the KPPA external network. Crowe then attempted to identify and verify vulnerabilities that could allow an attacker to gain elevated access to the KPPA network or to gain access to sensitive information. Crowe also assessed the security awareness of KPPA employees through surreptitious attempts to persuade employees to divulge information and execute malicious programs.

- Internal Penetration Assessment: The objective of the Internal Penetration Assessment was to assess the ability of the KPPA network to resist attacks from internal threats. Crowe identified KPPA systems and services that were accessible on the KPPA internal network. Crowe then attempted to identify and verify vulnerabilities that could allow an attacker to gain elevated access to the KPPA network or to gain access to sensitive information. Crowe also assessed the security awareness of KPPA employees through surreptitious attempts to persuade employees to gain access to the internal network and employee workstations.

- Microsoft 365 Security Assessment: The overall objective of the assessment was to assess the ability of KPPA's Office 365 configuration to resist attacks from the perspective of an external attacker as well as internal malicious user role or accidental exposure.

- Application Assessment: The objective of the Application Code Assessment is to identify the KPPA Line of Business applications to resist attacks from malicious actors. This was assessed by attempting to identify and verify vulnerabilities that could allow an attacker unauthorized access to the application or to sensitive data.

Significant Findings

Finding Criticality	**Information Security Assessment**	**Resolved Findings to Date**
Low Risk	19	4
Moderate Risk	13	5
High Risk	2	1
Total Findings	**34**	**10**

** Note: Three of the Low Risk findings are related to the Application Assessment.

Crowe has documented the assessment findings in their report dated May 2022. Due to the threat level has increased in the cyber security world, Crowe raised their scoring level compared to past years.

High Risk – Requires immediate remedy and, if left uncorrected, exposes KPPA to significant or immediate risk of loss, asset misappropriation, data compromise or interruption, fines and penalties, or increased regulatory scrutiny.

Moderate Risk – Requires timely remedy and, if left uncorrected, may expose KPPA to risk of loss or misappropriation of company assets, compromise of data, fines and penalties, or increased regulatory scrutiny. These issues should be resolved in a timely manner, but after any high priority issues.

Low Risk – Should be addressed as time and resources permit. While it is not considered to represent significant or immediate risk, repeated oversights without corrective action or compensating controls could lead to increased exposure or scrutiny.

Additional Recommendations

The annual third-party information security audit is a critical measurement of how well KPPA is protecting our resources and member data. In addition to the findings from the assessments, I recommend the following:

Third Party Infrastructure Assessment

- A third party information security audit should once again be approved and conducted to ensure remediation efforts were successful and to identify any new risks and vulnerabilities. The assessment should be conducted in 2024.

Assessment Remediation

- The Division of Enterprise & Technology Services should continue to ensure that issues identified in the Crowe assessment report, along with issues identified in previous assessment reports, are remediated and that controls remain in place when system changes occur. All recommendations should be implemented or in the case of business needs that make implementation not feasible, the risk of not implementing should be addressed through the formal security exemption process.

Personnel Related

- KPPA needs to proactively continue to make security-focused training available to all business and technical employees, as well as targeted security awareness materials related to the mission and operations of KPPA. This training will meet regulatory requirements and help ensure that our staff members protect member data and resources.

cc: John Chilton, KRS Chief Executive Officer
Ed Owens, CERS Chief Executive Officer
Rebecca H. Adkins, Executive Director, Office of Operations
Erin Surratt, Executive Director, Office of Benefits
Steve Willer, Executive Director, Office of Investments
Michael Board, General Counsel, Office of Legal Services
Lori Casey, Division Director, Human Resources
Connie Davis, Division Director, Accounting
Kristen Coffey, Chief Auditor

KENTUCKY PUBLIC PENSIONS AUTHORITY
David L. Eager, Executive Director
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Kentucky Public Pensions Authority

MEMORANDUM

TO: Kristen Coffey, Director of Internal Audit

FROM: Carrie Bass, Staff Attorney Supervisor, Office of Legal Services

DATE: November 27, 2023

SUBJECT: Potential Information Disclosures/Breaches Affecting the Kentucky Public Pensions Authority ("KPPA"), 1st Quarter Fiscal Year 2024

DATA ON POTENTIAL DISCLOSURES/BREACHES 1st QUARTER FY 2024

Total Disclosures/Breaches Investigated: 3

Total Number Investigated	Type
0	Implicated HIPAA/HITECH
0	Implicated state law
3	Implicated KPPA Data Disclosure Notification Policy
3	Found not to be a disclosure/breach

Total Members Affected by Potential Disclosures/Breaches: 3

Total Potential Disclosures/Breaches by Source of Disclosure/Breach

Total Number of Disclosures/Breaches	Source
3	KPPA, KRS, or CERS
0	External (e.g., vendor, business associate)

Total Potential Disclosures/Breaches by Method of Disclosure/Breach

Total Number of Disclosures/Breaches	Method
0	Email
3	Mail
1	Self-Service
0	Phone
0	Fax
0	Other

SYNOPSES ON POTENTIAL DISCLOSURES/BREACHES 1st QUARTER FY 2024

KPPA, KRS, and CERS Disclosures/Breaches

- **Federal law (HIPAA/HITECH):** There were no potential breach of protected health information by the KPPA.

- **State law (KRS 61.931, et seq.):** There were no potential "security breaches" of "personal information" as defined by state law by the KPPA.

- **KPPA Internal Data Disclosure Notification Policy:** The following disclosures occurred under the KPPA's Data Disclosure Notification Policy.

    - **Background:** There were two (2) instances where a member received their final retirement packet along with another member's final retirement packet.
        - **Root Cause:** Human error while stuffing documents to be mailed.
        - **Follow Up:** Recipient called KPPA. The KPPA department head sent a disclosure report to the Office of Legal Services. Staff sent the recipient a pre-paid envelope addressed to the Office of Legal Services so the member could return the documents to KPPA. Additionally, training was provided to new staff to discuss importance of carefully separating correspondence to avoid additional disclosures.
    - **Background:** A member received a completed copy of a health insurance exception form via U.S. Mail and upload on Self-Service Portal meant for another member.
        - **Root Cause:** KPPA staffer thought they had uploaded a blank form, but a form the staffer had previously been working on attached to upload and went to print instead.
        - **Follow Up:** Recipient called KPPA and a pre-paid envelope as sent for the member to return the document. Additionally, KPPA staff deleted the form from the recipient's Library Manager file.

External Disclosures/Breaches

No external disclosures were made by KPPA vendors or business associates this quarter.

RECOMMENDATION

This memorandum is provided for informational purposes only.

KENTUCKY PUBLIC PENSIONS AUTHORITY
David L. Eager, Executive Director
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Kentucky Public Pensions Authority

MEMORANDUM

TO: Kristen Coffey, Chief Auditor

FROM: Carrie Bass, Staff Attorney Supervisor, Office of Legal Services
Stephanie Hold, Investigator II, Office of Legal Services

DATE: November 27, 2023

SUBJECT: Tips Received Regarding Fraud, Waste, and Abuse

The information contained in this memo concerns tips regarding potential fraud, waste and abuse received by the Kentucky Public Pensions Authority (KPPA), including updates on all open cases and cases closed since the last meeting of the Kentucky Public Pensions Authority Audit Committee (Audit Committee).

OPEN FRAUD TIP CASES

Since the Audit Committee met on August 17, 2023, the KPPA received eight (8) fraud tips. Five (5) of these tips were closed following review and three (3) tips are currently open.

As of the date of this memo, the KPPA has seven (7) cases in open status. The following chart provides current information for all open cases as of the date of this Memorandum:

Date Reported	Allegation(s)	Current Action
12/13/2022	Alleged failure of an employer to report all employees in regular fulltime positions	The Office of Legal Services is investigating.
12/27/2022	Alleged prearranged agreement for an employee to retire and return to work for the same employer.	As of the date of this memo, the member has not submitted reemployment documents to the KPPA.
02/11/2023	Alleged prearranged agreement for an employee to retire and return to work for the same employer.	The Office of Legal Services is investigating.

Date Reported	Allegation(s)	Current Action
07/04/2023	Alleged improperly earned overtime pay resulting in pension spiking by two (2) members.	The Office of Legal Services continues to monitor the members' files.
09/26/2023	Alleged prearranged agreement for an employee to retire and return to work for the same employer.	As of the date of this memo, the Office of Legal Services continues to monitor.
10/10/2023	Alleged prearranged agreement for an employee to retire and return to work for the same employer and alleged no break in service following retirement.	The Office of Legal Services is investigating.
11/02/2023	Employer not making the required retirement contributions for employees since January 2021.	The Office of Legal Services is working with ERCE to address the issue.

(Memo continued on next page.)

FRAUD TIPS CLOSED SINCE LAST MEETING

As of the date of this memo, eight (8) cases have been closed since the last meeting of the KPPA Audit Committee. The following case(s) were closed since the last meeting:

Date Reported	Allegation(s)	Disposition
10/03/2022 & 10/28/2022	Alleged prearranged agreement for an employee to retire and return to work for the same employer.	Member has not requested reemployment a year after retiring; therefore, the allegation was unsubstantiated and closed.
02/28/2023	Alleged prearranged agreement for an employee to retire and return to work for the same employer.	The Office of Legal Services received additional documentation which did not support the allegation.
04/25/2023	Alleged prearranged agreement for an employee to retire and return to work for the same employer; alleged failure to observe required break in service between retirement and reemployment.	The Office of Legal Services substantiated the allegations. The member has appealed, and the Office of Legal Services is monitoring the appeal.
08/23/2023	Exact same email received by the KPPA on 01/05/2023 regarding to an alleged prearranged agreement for an employee to retire and return to work for the same employer	The Office of Legal Services investigated this tip and closed as unsubstantiated in April 2023.
08/29/2023	Same complaint received on 04/14/2023, not relevant to KPPA.	The Office of Legal Services already provided guidance to caller regarding the correct agency to contact. The allegation was closed.
09/22/2023	Allegations of fraud related to a deceased member's retirement account perpetrated by a friend of the member.	The Office of Legal Services contacted the complainant and advised what documents the KPPA needed and confirmed a payment was not issued inappropriately. The allegation was closed.

10/07/2023	Alleged disability fraud.	The Office of Legal Services contacted the complainant, and it was determined the allegation did not pertain to a KPPA member. The allegation was closed.
10/17/2023	Allegation the member did not adhere to the required break in service.	The Office of Legal Services determined the complaint is already being addressed by the KPPA. The allegation was closed.

RECOMMENDATION

This memorandum is provided for informational purposes only.

Kentucky Public Pensions Authority

Division of Internal Audit

To: Members of the KPPA Audit Committee

From: Kristen N. Coffey, CICA
Chief Auditor

Date: November 27, 2023

Subject: Fiscal Year 2024 Internal Audit Budget as of September 30, 2023

Account Number	Account Name	FYE 2024 Budget	FY 2024 Actual Expenditures	Remaining Budget	Percent Remaining
111	Salaries	$ 339,000.00	$ 79,846.24	$ 259,153.76	76.45%
121	Employer Paid FICA	25,933.50	5,978.71	19,954.79	76.95%
122	Employer Paid Retirement	221,338.65	54,333.57	167,005.08	75.45%
123	Employer Paid Health Insurance	45,000.00	12,208.56	32,791.44	72.87%
124	Employer Paid Life Insurance	60.00	15.00	45.00	75.00%
133T	Employee Training	3,400.00	-	3,400.00	100.00%
259T	Conference Expenses	3,000.00	-	3,000.00	100.00%
361T	Travel - In State	1,000.00	-	1,000.00	100.00%
362T	Travel - Out State	3,000.00	-	3,000.00	100.00%
381T	Dues & Subscriptions	1,200.00	-	1,200.00	100.00%
399T	Miscellaneous	200.00	-	200.00	100.00%
847T	Computer Equipment	20,000.00	-	20,000.00	100.00%
	Total	**$ 663,132.15**	**$ 152,382.08**	**$ 510,750.07**	**77.02%**

Project Code	Project Name	State	Phase	Scheduled Start	Actual Start	Scheduled End	Actual End	Total FY 2024 Audit Plan Hours	FY 2023 Hours	Quarter 1 Hours	Total FY 2024 Hours to Date	Estimated Hours	Estimated Hours Variance
2024-1	Review of Investment Manager Fees	Open	Review	7/10/2023	5/1/2023	10/13/2023	11/17/2023	574.75	195.00	379.75	379.75	600.00	(25.25)
2024-2	Review of Member Information Utilized for Retirement	Open	Planning	9/5/2023	5/31/2023	12/8/2023		70.25	51.00	19.25	19.25	600.00	(529.75)
2024-3	Review of Interest Applied to Member Accounts	Open	Fieldwork	7/3/2023	5/25/2023	10/19/2023		202.25	107.00	95.25	95.25	600.00	(397.75)
2024-4	Review of Expense Allocation	Open	Completion	7/3/2023	5/18/2023	9/15/2023	9/22/2023	475.00	183.50	291.50	291.50	450.00	25.00
2024-5	Implementation of New Legislation	Open	Planning	10/2/2023	10/2/2023	1/12/2024		0.00	0.00	0.00	0.00	300.00	(300.00)
2024-6	Review of Employer Outstanding Invoices	Open	Not Started					0.00	0.00	0.00	0.00	600.00	(600.00)
2024-7	Review of Employer Contributions	Open	Not Started					19.50	0.75	18.75	18.75	600.00	(580.50)
2024-8	Review of Disclosures During Correspondence	Open	Planning	9/25/2023	10/3/2023	1/12/2024		0.00	0.00	0.00	0.00	600.00	(600.00)
2024-9	Review of Administrative Fees	Open	Not Started					0.00	0.00	0.00	0.00	600.00	(600.00)
2024-10	Review of Refunds	Open	Not Started					0.00	0.00	0.00	0.00	600.00	(600.00)
2024-Other-1	FY 2024 Board and Committee Meetings	Open	Fieldwork	7/1/2023	7/1/2023	6/30/2024		112.00	0.00	112.00	112.00	425.00	(313.00)
2024-Other-2	FY 2024 Process Documentation	Open	Planning	7/1/2023	7/5/2023	6/30/2024		8.50	0.00	8.50	8.50	300.00	(291.50)
2024-Other-3	FY 2024 Miscellaneous KPPA Projects/Work Groups	Open	Fieldwork	7/1/2023	7/5/2023	6/30/2024		52.00	0.00	52.00	52.00	400.00	(348.00)
2024-Other-4	FY 2025 Audit Charter Updates	Open	Not Started					0.75	0.00	0.75	0.75	20.00	(19.25)
2024-Other-5	Trustee Election RFP	Open	Fieldwork	12/1/2022	1/26/2023	12/29/2023		11.00	6.50	4.50	4.50	125.00	(114.00)
2024-Other-6	Self-Assessment for Peer Review	Open	Completion	7/5/2023	7/11/2023	9/29/2023	10/19/2023	321.75	6.75	315.00	315.00	500.00	(178.25)
2024-Other-7	FY 2025 Board Election Policy Updates	Open	Fieldwork	9/5/2023	8/10/2023	9/29/2023		4.75	0.00	4.75	4.75	20.00	(15.25)
2024-Other-8	FY 2024 ACFR and SAFR Review	Open	Fieldwork	9/1/2023	9/11/2023	11/17/2023		15.00	2.00	13.00	13.00	150.00	(135.00)
2024-Other-9	FY 2025 Risk Assessment and Audit Plan	Open	Planning	7/1/2023	7/17/2023	5/15/2024		29.25	0.00	29.25	29.25	300.00	(270.75)
2024-Other-10	Internal Audit Meetings	Open	Fieldwork	7/1/2023	7/3/2023	6/30/2024		175.00	0.00	175.00	175.00	500.00	(325.00)
2024-Other-11	Other KPPA Meetings	Open	Fieldwork	7/1/2023	7/3/2023	6/30/2024		40.25	0.00	40.25	40.25	260.00	(219.75)
2024-Other-12	Evaluations	Open	Fieldwork	7/1/2023	7/3/2023	6/30/2024		35.50	0.00	35.50	35.50	70.00	(34.50)
2024-Other-13	Training	Open	Fieldwork	7/1/2023	7/3/2023	6/30/2024		206.00	0.00	206.00	206.00	400.00	(194.00)
2024-Other-14	Miscellaneous Internal Audit Projects	Open	Fieldwork	7/1/2023	7/10/2023	6/30/2024		87.25	0.00	87.25	87.25	235.00	(147.75)
	Administrative Hours	Open	Fieldwork	7/1/2023	7/1/2023	6/30/2024		461.50	0.00	461.50	461.50	882.00	(420.50)
	Non-Working Hours	Open	Fieldwork	7/1/2023	7/1/2023	6/30/2024		273.75	0.00	273.75	273.75	650.00	(376.25)
	Holidays	Open	Fieldwork	7/1/2023	7/1/2023	6/30/2024		82.50	0.00	82.50	82.50	465.00	(382.50)
								3,258.50	**552.50**	**2,706.00**	**2,706.00**	**11,252.00**	

Available Hours FY 2024 (including holidays)	9,975.00
Available Hours Remaining in FY 2024 (including holidays)	7,312.50
Estimated Overtime for FY 2024	**43.50**
Average Overtime Worked in FY 2024, per employee	**8.70**
FY 2024 Project Hours Charged	1,888.25
FY 2024 Administrative Hours	461.50

Kentucky Public Pensions Authority

Division of Internal Audit

Kentucky Public Pensions Authority

To: Members of the Kentucky Public Pensions Authority Audit Committee

From: Kristen N. Coffey, CICA
KPPA Chief Auditor

Date: November 27, 2023

Subject: Summary of Issued Audits

The Division of Internal Audit has completed three audits since the last KPPA Audit Committee Meeting.

1. Allocation of Expenses – No findings were noted. Our review found that processes related to the Review of Expense Allocation are operating effectively and efficiently and comply with state statutes as well as agency policies and procedures. Internal controls are established and working effectively and efficiently.

2. Review of Investment Manager Fees – three findings were noted; two reportable and one communicated in a separate management letter. Our review found that processes comply with relevant statutes, regulations, policies, and procedures. Internal controls are established and working effectively and efficiently.

3. Quality Assurance and Improvement Plan: Self-Assessment - It is our overall opinion that the Division of Internal Audit partially conforms with the *Standards* and generally conforms with the Code of Ethics.

Action Needed: We request the Audit Committee take the following actions:

1. **Accept the results of the internal audits.**
2. **Accept management's responses and implementation dates.**
3. **Submit the audit results to the full KPPA Board and ask that they authorize KPPA staff to take the corrective action outlined in management's responses.**
4. **For the Quality Assurance and Improvement Plan: Self-Assessment – Approve the Division of Internal Audit staff to request the completion of an external validation.**

KPPA

Kentucky Public Pensions Authority

Review of Expense Allocation

Issued September 22, 2023

Lead Auditor: William Prince

Acronyms

The following acronyms will be used throughout the report:

1. KPPA - Kentucky Public Pensions Authority
2. CERS - County Employees Retirement System
3. KERS - Kentucky Employees Retirement System
4. SPRS - State Police Retirement System
5. KRS - Kentucky Retirement System
6. CEO – Chief Executive Officer
7. CIO – Chief Investment Officer
8. KPPA Executive Management team - KPPA Executive Director, KPPA Deputy Executive Director, KPPA CIO, KPPA Executive Director-Office of Legal Services, and KPPA Executive Director-Office of Benefits
9. eMARS - enhanced Management Administrative Reporting System

Objective

The objectives of our Review of Expense Allocation audit were to ensure internal controls have been designed and are operating effectively and efficiently. We also ensured compliance with applicable state statutes as well as policies established by the KPPA, CERS and KRS Boards and procedures developed by KPPA staff.

Executive Summary

Our review found that processes related to the Review of Expense Allocation are operating effectively and efficiently and comply with state statutes as well as agency policies and procedures. Details about the items tested can be found in the Risks and Testing Methodology section of the report.

Commendations

We commend KPPA staff for taking steps to quickly implement House Bill 484 (2020 regular session) and House Bill 297 (2022 regular session). Processes have been established to ensure the KPPA Board approves an allocation rate annually and to ensure staff allocate administrative expenses according to the approved rate. Additionally, the KPPA Chief Financial Officer provides regular updates to Trustees concerning the allocation of expenses.

Scope, and Sampling

Since this was the first audit performed on a newly established process, sampling was not used for most items. Additionally, most of the testing performed was related to items that occur monthly, so it was feasible for the entire population to be tested. In relation to the system specific expenses, sampling was used. The auditor identified 165 system specific expenses totaling $1,306,640 and tested 22 of them, totaling $728,786. The sample was selected using auditor judgement so that the number of items per system in the sample was proportionate to the number of system items in the overall population.

Risks and Testing Methodology

Risk:	Board of Trustees may not receive proper information timely.
COSO Element:	Information and Communication
COSO Principle	Management communicates necessary information internally.
Control:	Agenda items and deadline set by KPPA Board Chair.
Testing Methodology:	Reviewed all Board of Trustee minutes for the scope of the audit to ensure the allocation rate was approved timely and that an update on expense allocation was provided at each meeting.
Test Results:	No exceptions noted.

Risk:	Lack of back-ups in key areas of KPPA.
COSO Element:	Control Activity
COSO Principle	Management designs control activities to achieve objectives and respond to risks.
Control:	Employees are cross-trained.
Testing Methodology:	Ensured monthly drawdowns were made timely and if not ensured the delay was not the result of trained employees being unavailable.
Test Results:	No exceptions noted.

Risk:	Duties are not segregated.
COSO Element:	Control Environment
COSO Principle	Oversight body and management establish an organizational structure, assigns responsibility, and delegates authority to achieve the entity's objectives.
Control:	1. eMARS requires segregation of duties for transactions. 2. Administrative drawdowns require approval from KPPA staff and the Finance and Administration Cabinet.
Testing Methodology:	1. Ensured different individuals entered and approved monthly drawdowns in eMARS. Ensured Finance and Administration Cabinet approved eMARS entries. 2. Ensured monthly drawdown wires were created and approved by different individuals.
Test Results:	No exceptions noted.

Risk:	Allocation of expenses may be inaccurate.
COSO Element:	Control Activities
COSO Principle	1. Management designs control activities to achieve objectives and respond to risks. 2. Management implements control activities through policies.
Control:	1. KPPA Board approves the allocation rate. 2. Approved allocation rate is applied to monthly drawdowns. 3. For system specific expenses, invoice approvers note the system to be charged on the invoice. 4. Administrative expenses are reconciled at year-end.
Testing Methodology:	1. Ensured rate for all expense categories was approved timely by the KPPA Board. 2. Ensured monthly drawdown and return amount was allocated correctly. 3. Ensured system specific expenses were identified and allocated properly.

	4. Ensured monthly drawdown amounts entered in Great Plains matched the amount recorded in eMARS. 5. Ensured administrative expenses were accurately reported on the financial statements.
Test Results:	No exceptions noted.

Risk:	Costs attributable to separation are not approved by KPPA Board and/or are not paid solely by CERS
COSO Element:	Control Activities
COSO Principle	1. Management designs control activities to achieve objectives and respond to risks. 2. Management implements control activities through policies.
Control:	KPPA Board approves expenses related to the separation of CERS and KRS.
Testing Methodology:	1. Ensured the KPPA Board approved the separation expenses. 2. Ensured costs attributable to the separation were paid by CERS.
Test Results:	No exceptions noted.

Risk:	Administrative and investment expenses not reported to Public Pension Oversight Board timely.
COSO Element:	Information and Communication
COSO Principle	Management communicates necessary information externally.
Control:	KPPA staff established calendar reminders to meet deadlines.
Testing Methodology:	Ensured required information was provided to the Public Pension Oversight Board timely.
Test Results:	No exceptions noted.

Risk:	Policies and/or procedures not accurate
COSO Element:	Control Activity
COSO Principle	Management implements control activities through policies.
Control:	Procedures are updated as needed when a change is made to the process.
Testing Methodology:	Evaluated division procedures and ensured there were thorough, accurate, and available to staff.
Test Results:	No exceptions noted.

Recommendations for Future Audits

1. Review process that has been established to determine the amount of the monthly administrative expense drawdown.
2. Ensure expenses are coded properly since this could impact the expense allocation rate. This will be addressed in the Great Plains to eMARS reconciliation follow-up audit.
3. Review the re-evaluation ("True-up") process, approved by the KPPA on March 24, 2022, once it is officially established (required -beginning in fiscal year 2024). This process involves ensuring the recommended allocation rate is based on the actual costs of the previous fiscal years rather than on estimates. Additionally, this process involves identifying significant costs, described as groups of similar costs exceeding $10,000, which should be a direct charge rather than charged using the allocation method.

Background

During the 2020 legislative session, House Bill 484 was passed, which transferred the oversight of the CERS from the KRS Board to a newly established CERS Board. The oversight of the KERS and the SPRS continued to be the responsibility of the KRS Board. Additionally, the KPPA was established to provide the personnel needs, day-to-day administrative duties, and other tasks for the CERS Board and the KRS Board. House Bill 484 specified that all expenses incurred by or on behalf of the KPPA were to be paid by the systems administered by the KRS or the CERS and are to be prorated, assigned, or allocated to each system as determined by KPPA. Additionally, House Bill 484 specified that the initial costs as well as ongoing annual administrative and investment expenses attributable solely to establishing a separate CERS Board and the KPPA were to be paid by the CERS. During the 2022 legislative session, House Bill 297 was passed, which established a cutoff date of June 30, 2024, in relation to CERS paying exclusively for the initial costs and ongoing annual administrative and investment expenses attributable solely to establishing a separate CERS Board and the KPPA. House Bill 297 specified that beginning July 1, 2024, the annual administrative and investment expenses would be prorated, assigned, or allocated to each system as determined by KPPA, but without attribution to the establishment of the separate CERS Board and the KPPA.

House Bill 297 added a requirement that the KPPA report to the Public Pension Oversight Board the annual administrative and investment expenses of the CERS and the KRS on or before November 15, 2022. Additionally, a requirement was added that on or before November 15, following the close of each successive fiscal year, the KPPA shall provide a report to the Public Pension Oversight Board that includes, but is not be limited to, the process or manner the KPPA used to prorate, assign, or allocate to each system its share of the expenses; the amount of expenses prorated, assigned, or allocated to each system itemized by category; and any efforts by CERS, KRS, or the KPPA to reduce administrative costs and staffing needs.

To address the requirements of House Bill 484 and House Bill 297, a working group was formed to develop an allocation method for expenses. On the March 24, 2022, the KPPA approved the hybrid allocation method, which was to be used for fiscal years 2022 and 2023.

Use of Report

This report is intended solely for use by the KPPA Audit Committee; the KPPA, CERS, and KRS Boards; the Executive Management teams for KPPA, CERS, and KRS; and the Division of Accounting. This report is not intended to be, and should not be, used by anyone other than the specified parties. All final reports are subject to Open Records Requests.

KPPA

Kentucky Public Pensions Authority

Review of Investment Manager Fees

As of August 25, 2023

Issued November 17, 2023

Lead Auditor: Madeline Evans

Acronyms

The following acronyms will be used throughout the report:

1. KPPA - Kentucky Public Pensions Authority
2. CERS - County Employees Retirement System
3. KERS - Kentucky Employees Retirement System
4. SPRS - State Police Retirement System
5. KRS - Kentucky Retirement System
6. CEO - Chief Executive Officer
7. CIO - Chief Investment Officer
8. CFO - Chief Financial Officer
9. Investment Operations – KPPA Division of Accounting, Investment Operations Branch
10. KPPA Management Team – KPPA Executive Director, KPPA Deputy Executive Director, KPPA Executive Director of Operations, and the KPPA CFO
11. BNY Mellon - Bank of New York Mellon
12. AUM – Assets Under Management
13. RMS – Research Management System
14. DETS – Division of Enterprise and Technology Services

Objectives

The objectives of our Review of Investment Manager Fees audit were to ensure internal controls have been designed and are operating effectively and efficiently. We also ensured compliance with applicable state and federal statutes and regulations as well as policies established by the KPPA, CERS, and KRS Boards and procedures developed by KPPA staff.

Overall Opinion

Process complies with relevant statutes, regulations, policies, and procedures. Internal controls are established and working effectively and efficiently.

Executive Summary

The following reportable findings were noted during our review of Review of Investment Manager Fees. The related recommendations can be found in the Audit Results section of the report.

1. Lack of centralized storage location for investment information.
2. Management fees paid did not match fees reported by external investment manager.

We noted one other matter that we communicated to the Office of Investments and the Division of Accounting in a separate letter dated November 17, 2023.

Commendations

We want to thank Office of Investments and Investment Operations staff for the time spent working with the audit team on this project. Specifically, the Public Equity Portfolio Manager and the Accounting Assistant Director for Investment Operations helped internal audit staff immensely with their understanding of how to recalculate fees for invoiced managers and how to check the reasonability of fees charged for non-invoiced fees.

Scope, and Sampling

The scope of the audit was July 1, 2022 to June 30, 2023. Auditor created a database to show each manager listed in eVestment and the corresponding asset class and status. This list was then compared to a list of managers provided by Office of Investments and a list of managers provided by Investment Operations staff to confirm that both groups were working with the same group of managers and that each list matched the information in eVestment. There are 124 active managers:

- Twenty-one invoiced managers – investment managers send invoices to KPPA for payment of manager fees paid. These fees go through an extra review process prior to payment.
- Forty-five active mangers, and
- Fifty-eight managers identified as de minimis. Active and de minimis managers do not use invoices. De minimis managers are seen as separate from the active managers because they often do not have manager fees charged because they do not have a balance that makes up at least 10 basis points of the overall Pension or Insurance assets under management.

Twenty investment managers were randomly sampled proportionate to their asset class and status with a 95% confidence interval. This sample represents 15% of the total testing population.

Risks, Controls, and Testing Methodology

See Appendix A for details on the risks noted during the audit, the controls established to mitigate the risks, and the testing methodology utilized to confirm the effectiveness and efficiency of the established controls.

Recommendations for Future Audits

1. Ensure the management fee report provided to Trustees shows the correct amount charged in management fees.
2. Ensure external investment managers are submitting needed information in a timely manner.
3. Review amount of investment management and performance fees paid by KPPA in proportion to the amount managed and the returns received. Compare this to the industry standard as well as similarly sized pension systems. *Note: this was a concern raised by a KRS Trustee during an Investment Committee meeting.*
4. Ensure investment administrative fees are processed correctly.
5. Review the Office of Investments Due Diligence process.

Background

See Appendix B for details on background of this investment manager fee review process.

Use of Report

This report is intended solely for use by the KPPA Audit Committee; the KPPA, CERS, and KRS Boards; the CERS CEO; the KRS CEO; the KPPA Management Team; and the Division of Accounting. This report is not intended to be, and should not be, used by anyone other than the specified parties. All final reports are subject to Open Records Requests.

Audit Results

1. **Lack of Centralized Storage Location for Investment Information**

Responsible Area(s):	Office of Investments and Investment Operations
Condition:	1. Staff in the Office of Investments and Investment Operations do not utilize the same list of investment managers. 2. There is not a centralized storage location for investment contracts. Instead, contracts may be stored on the Investments shared drive, on SharePoint, or in eVestments. 3. During testing, it was determined that the invoice for Shenkman 3Q 2022 was not saved to SharePoint. However, the invoice was later found on the Investments shared drive. 4. During testing, it appeared that the accruals for Shenkman and Tortoise 3Q 2022 were out of balance. It was determined this was the result of the prior quarter's invoices being paid late, which led to one accrual adjustment to be made in 3Q 2022 instead of two separate adjustments for each quarter. 5. Permissions on the Investment Manager Fees SharePoint site do not enforce the appropriate level of segregate the duties.
Criteria:	KPPA has adopted the COSO framework. Principle 3 of the COSO framework states that "management should establish organizational structure, assign responsibility, and delegate authority to achieve the entities objectives."
Cause:	1. The list of investment managers submitted by Investment Operations staff was generated from Nexen. This list still included some managers who had been terminated but their account had not yet been closed. The Office of Investments submitted a list that is updated by staff in the Office of Investments; Investment Operations staff do not have access to this document. 2. The Office of Investments assigned one staff member to upload all documents into eVestment. This staff member was assigned to other tasks that often took priority over updating eVestment. 3. Uploading invoices to SharePoint and the associated workflow is a new process due to the recent implementation of Microsoft 365. 4. The 2Q 2022 Shenkman invoice was paid late because only one staff member received the email with the initial invoice. That staff member did not realize the invoice had not been received by those responsible for initiating the payment process. The 2Q 2022 Tortoise invoice was received late because the investment manager, in their words, was having "large discussions." 5. SharePoint was initially intended to be used only as a notification system and not as a part of the approval process. SharePoint cannot currently segregate permissions between preparing and approving a document while still giving appropriate access to other parts of the Office of Investments TeamSite.
Effect:	1. Documentation is duplicated across the Investments shared drive, SharePoint and eVestment. If a document changes, but is only updated in one location, staff may not be utilizing the final version of the document. For example, staff could use an older version of a contract when reviewing fees. 2. As noted in condition 4, invoices may be paid late, which could result in late fees being owed by KPPA or an invoice not going through the appropriate review and approval processes. 3. Other approval processes set up in SharePoint may not segregate the permissions of preparer and approver appropriately.
Recommendations:	Based on conversations with Office of Investments staff, it is the understanding of audit staff that the Office of Investments agrees that there is a need for a sole repository of investment documentation. With this objective in mind, the CIO and CFO

	should establish a workgroup comprised of staff from the Office of Investments and Investment Operations to upload all documentation that needs to be retained for each investment manager. The workgroup should also consider the following: 1. Establishing guidelines on what should be saved in a centralized repository of documents. Any official procedures for uploading information to the central repository should be documented. 2. Determining whether there are requirements for documentation uploaded in a centralized repository. Any official requirements should be documented. 3. Establishing appropriate permissions to segregate duties in the centralized repository. 4. Ensuring that each investment manager has the correct contact information for emailing invoices. Additionally, KPPA has implemented Microsoft 365 in an effort to streamline information and document sharing between team members and departments and to also promote collaboration through its cloud-based services as a way to decrease duplicative documents. As a result, the shared drives used by departments at KPPA will be eliminated. The use a central repository supports the initiative of collaboration among staff and reduced reliance on the shared drives.
Recurring Issue:	No
Management Response:	KPPA staff agree with the Internal Audit recommendations and concur that there is a lack of centralized storage for investment information. The Office of Investments and the Investment Operations Branch will investigate the appropriate solution to put into place while taking the Internal Audit recommendations into full consideration. We do want to clarify a few items within the detail of the audit finding as follows: 1. Condition 1: The Office of investments and Investment Operations do utilize the same list(s) of investment managers; however, we do not reconcile all the sources in which we utilize, resulting in discrepancies between the multiple lists. A centralize storage location, with a reconciled list of managers, would help ensure a complete list is being utilized by all relevant parties, and we will work to incorporate that into the appropriate solution. 2. Condition 3: This was an oversight while implementing a new process, however, the appropriate documentation was maintained, just not in a centralized storage location. 3. Cause 1 – NEXEN was also the source of the information the Office of Investments provided, but staff had simply removed accounts where managers had been terminated but custody accounts remained open based on our interpretation of the information requested by audit. 4. Cause 2 – Office of Investments utilized multiple interns to assist in the initial upload of documents to eVestment which constituted the bulk of the work to onboard the system. Routine maintenance and uploading of new documents did not constitute excessive work for a single staff member even with additional duties and provided a gatekeeper and control function. 5. Cause 4 – Investment staff is reaching out to managers to ensure appropriate distribution lists are used for all invoicing. 6. Effect 2 - All investment invoices will require a separate signature and approval by two authorized individuals going forward.
Implementation Date:	June 28, 2024
Auditor Response:	Auditor agrees with the plan of action described in management's response. Internal Audit would be happy to be included in the development of the centralized location, if the CIO and CFO believe this would be beneficial. Additionally, in relation to cause 2, the information is based on what was provided to audit staff during the audit. The finding, including the cause, was

	provided to staff multiple times prior to the release of the draft report. If clarification had been requested during those reviews, audit staff would have been happy to adjust the cause.

2. **Management Fees Paid Do Not Match to Reported Manager Fees**

Responsible Area(s):	Investment Operations
Condition:	BNY Mellon staff and the Investment Operations staff member who prepared the reconciliation included the loan administration fee of $46,875 between pension and insurance as a part of the manager fee payment made to one investment manager. *Note: KPPA Investment Operations staff corrected the mistake on September 1, 2023.*
Criteria:	200 Kentucky Administrative Regulation 38:070 states, "Each fiscal officer shall develop and document internal controls to both prevent and detect abuse, unintentional errors, and the fraudulent disbursement of funds or use of state assets...An internal control plan shall include...Reconciliation of agency accounts on a timely basis...."
Cause:	The reconciliation worksheet used by Investment Operations staff failed to detect the error because the reviewer did not compare the information entered in the reconciliation worksheet to the source document (the manager's quarterly statement). The reasoning for not reviewing this specific manager's source document was that the reviewer only spot checks some managers, rather than reviewing the source document for every manager.
Effect:	Manager fees reported on the KPPA website for June 2023 were overstated by 10% for this specific manager. Despite the misclassification, there was no impact to the financial statements since loan administration fee and management fees are shown as one line item called investment expenses.
Recommendations:	The Investment Operations staff member who reviews the reconciliation between the manager fee entered by BNY Mellon and the fee reported by investment manager should utilize the source document when completing the review. We understand that this could be a burdensome task given the number of managers that are reviewed. We encourage Office of Investments and Investment Operations staff to create a workgroup to determine if comparing manager fees entered by BNY Mellon to the fees reported by the investment manager can be covered in a different existing procedure. 1. Consider removing managers who submit invoices from the reconciliation process since these managers are reviewed as a part of the accrual process. 2. Consider submitting each asset class separately for review so the reviewer is focused on smaller sets of data. 3. Determine if the reasonability check currently conducted by Investment Operations staff could also compare the BNY Mellon manager fee to the fee reported by the investment manager. For any recalculated rate that differs five basis points or more from the contracted rate, the reviewer should compare the information on the spreadsheet to the source document to ensure the correct information is noted in the spreadsheet. As an example, the manager noted in the condition had a recalculated rate that was six basis points higher than the contracted rate. If a review of the source document had been conducted the error would have potentially been caught at that time. Using the correct management fee amount would have resulted in a difference of three basis points between the recalculated amount and the contracted amount. 4. Consider telling BNY Mellon that the posting of management fees (non-invoiced) will be the sole responsibility of KPPA Investment Operations staff. Investment Operations staff would then develop official procedures to approve the posting of these fees.

Recurring Issue:	No
Management Response:	Investment Operations has updated their procedures to include the following language, "During the review process, if the fees posted by BNY Mellon exceed the threshold, then the first step will be to ensure the fee has been posted correctly by comparing the fee posted to the manager's report." Had this been done in this instance the error would have been noted and corrected.
Implementation Date:	June 28, 2024
Auditor Response:	On November 16, 2023, audit staff confirmed that procedures on the Investment Operations SharePoint called "Manager Fee for Website" have been updated with a statement instructing readers to compare the manager's statement against what was keyed into Nexen by BNY Mellon staff. We commend staff for already implementing one of the recommendations. We encourage Office of Investments and Investment Operations staff to continue reviewing the other recommendations made by audit staff.

Appendix A

Risks and Testing Methodology

Risk:	Policies and procedures not accurate.
COSO Element:	Control Environment
COSO Principle:	Oversight body and management establishes organizational structure, assigns responsibilities, and delegates authority to achieve entity's objectives.
Control:	Procedures are reviewed annually by the staff member who usually performs the task.
Testing Methodology:	Reviewed procedures related to the management fee payment processes for completeness and clarity.
Test Result:	Clarification and instruction needed in some procedures. This was addressed in the management letter.

Risk:	Segregation of duties.
COSO Element:	Control Environment
COSO Principle:	Oversight body and management establishes organizational structure, assigns responsibilities, and delegates authority to achieve entity's objectives.
Control:	1. **SharePoint Permissions -** DETS assigns users to the Investments TeamSite within SharePoint where invoices are saved and marked as approved. 2. **2 Types of Approval** – Portfolio managers review and approve the invoice when the wire is approved in Nexen. 3. **Nexen Requirements** – Nexen does not allow the same person to approve a wire that he or she prepared. Portfolio managers do not have the ability to prepare or approve a wire transaction.
Testing Methodology:	1. **Permission Capabilities** – Talked with DETS staff in charge of creating the management fee folder about permissions by user type. 2. **Invoice Approvals from Investments** – Confirmed that approval of the invoice came from the appropriate Portfolio manager. 3. **Unique users to prep and approve wires** – Confirmed that unique users keyed and approved wires in Nexen. 4. **Nexen Access testing** – Confirmed that Portfolio managers do not have Instruction Information capture permission in their list of permissions showing that they cannot key or approve wires.
Test Result:	SharePoint permissions were not appropriate (See Finding #1)

Risk:	Staff not properly trained to perform job duties.
COSO Element:	Control Environment
COSO Principle:	Oversight body and management establishes organizational structure, assigns responsibilities, and delegates authority to achieve entity's objectives.
Control:	New employees shadow the process.
Testing Methodology:	Confirmed that tasks were completed despite absence of the individual primarily responsible for the task, thus showing that other staff have been properly trained.
Test Result:	No exceptions noted

Risk:	Lack of Back-ups in Key Areas of KPPA
COSO Element:	Control Environment
COSO Principle:	Oversight body and management establishes organizational structure, assigns responsibilities, and delegates authority to achieve entity's objectives.

Control:	Back-up established if primary individual is unavailable.
Testing Methodology:	Confirmed that the named backup completed the task when the main staff member was not able to complete a task.
Test Result:	No exceptions noted.

Risk:	Board of Trustees may not receive proper information timely.
COSO Element:	Control Environment
COSO Principle:	Oversight body and management establishes organizational structure, assigns responsibilities, and delegates authority to achieve entity's objectives.
Control:	1. CIO prepares memo of fees and presents it at the Investment Committee meetings. 2. Investment Operations staff creates a report showing management fees by plan.
Testing Methodology:	1. Confirmed that the Investment Quarterly Update report was included in meeting materials posted on the KPPA website. 2. Confirmed that the management fee report was included in meeting materials posted on the KPPA website.
Test Result:	No exceptions noted.

Risk:	Violation of record retention policy.
COSO Element:	Control Environment
COSO Principle:	Oversight body and management establishes organizational structure, assigns responsibilities, and delegates authority to achieve entity's objectives.
Control:	1. Contracts are uploaded to eVestment. 2. Invoices are uploaded SharePoint.
Testing Methodology:	1. Reviewed eVestments to determine if contracts of the sampled managers had been uploaded. 2. Reviewed SharePoint to determine if invoices of the sampled managers had been uploaded.
Test Result:	No exceptions noted.

Risk:	Lack of oversight of manager fees.
COSO Element:	Control Environment
COSO Principle:	Oversight body and management establishes organizational structure, assigns responsibilities, and delegates authority to achieve entity's objectives.
Control:	1. Invoiced Fees are recalculated by Public Equity Portfolio Manager or the Specialty Credit and Fixed Income Portfolio manager. 2. Non-Invoiced Fees are checked for reasonability by the CIO and/or Deputy CIO. Reasonability is also checked by Investment Operations staff who calculate the fee rate used and then compare that rate to the contracted rate.
Testing Methodology:	1. Recalculated contract rate to ensure rate charged was within five basis points of the invoiced amount for Public Equity managers and 5% for Specialty Credit or Fixed Income managers. 2. Verified that the reasonability check performed by Investment Operations staff noted deviations greater than five basis points and that these items were sent to the Office of Investments for review. Confirmed that the worksheet used by Investment Operations had the correct fee schedule for sampled managers.
Test Result:	No exceptions noted.

Risk:	Invoices not paid timely or accurately.
COSO Element:	Control Activities
COSO Principle:	Management implements controls actives through policies.
Control:	1. Invoices are paid by due date or within 30 days of invoice receipt if no due date is provided. 2. Invoices are compared to BNY Mellon wire details.
Testing Methodology:	1. Compared due date to BNY Mellon value date to ensure invoice was paid timely. 2. Compared invoice amount to BNY Mellon wire amount to ensure the proper fee amount was paid.
Test Result:	No exceptions noted.

Risk:	Invoiced fees not accrued and adjusted correctly.
COSO Element:	Control Activities
COSO Principle:	Management implements controls actives through policies.
Control:	Accruals and adjustments keyed by BNY Mellon staff are compared to invoices sent by external investment managers.
Testing Methodology:	Recalculated accruals for sampled invoiced managers.
Test Result:	Second quarter 2022 invoices for Shenkman and Tortoise were not paid until the third quarter 2022 causing third quarter 2022 accruals to have a non-zero balance. (See finding #1)

Risk:	BNY staff do not keys fees correctly.
COSO Element:	Control Activities
COSO Principle:	Management implements controls actives through policies.
Control:	Non-invoiced manager fees are keyed into Nexen by BNY Mellon staff. Investment Operations staff compare this to the external investment manager reports.
Testing Methodology:	Compared manager reported fees to the amount keyed into Nexen by BNY Mellon staff.
Test Result:	The BNY Mellon posting for White Oak managers fees for the second quarter 2023 differed from the fees reported by the external investment manager (See Finding #2).

Risk:	Website not accurate
COSO Element:	Control Activities
COSO Principle:	Management implements controls actives through policies.
Control:	1. Manager fees are posted to the website quarterly through a report that Investment Operations staff generates from BNY Mellon. The Office of Investments approves the report before it is posted. 2. Management fees are shown in the Annual Comprehensive Financial Report. 3. The Performance Net of Fees chart is included in Investment Committee meeting materials.
Testing Methodology:	1. Confirmed that Web Help Desk tickets to post reports to the website were created after the Office of Investments approved the report. 2. Confirmed that all management fees from the report generated by Investment Operations staff were shown on the report posted to the website. 3. Confirmed that the Investment Expense section of Annual Comprehensive Financial Report showed total management fees. 4. Confirmed that the Performance Net of Fees chart was included in Investment Committee meeting materials.
Test Result:	No exceptions noted.

Appendix B

As of June 2023, KPPA monitors a total of 158 custody accounts at BNY Mellon. This audit reviewed 124 investment managers. The 34 accounts that were excluded included internally managed accounts, cash accounts, closed accounts, accounts in litigation, and terminated account. Of the 124 active managers, 21 since an invoice for manager fees and 103 are paid through adding fees to a capital call or netting against distributions or earnings. The following step for reviewing invoiced and non-invoiced fees were tested from 8/1/2023 to 9/26/2023.

<u>Invoice Payment Process</u>

External investment managers email invoices or notifications to the appropriate Investment Operations staff and corresponding Portfolio Manager. The attached invoices are downloaded and saved to the Investments shared drive. The Public Equity Portfolio Manager reviews, reconciles, and approves all Public Equity invoices. The process for Fixed Income is identical and is provided by the Fixed Income and Specialty Credit Portfolio Manager. The review of invoices by portfolio managers is explained in the fee recalculation section.

1. Retirement Investment Specialist III uploads the investment manager invoice to SharePoint for record retention and starts the workflow process. This sends an automated email to the CIO or Deputy CIO for all invoices.
2. The CIO or Deputy CIO confirms that invoiced fees have been checked by the Public Equity Portfolio Manager and Fixed Income and Specialty Credit Portfolio manager. If work is shown, the invoice is marked approved in SharePoint which sends an automated notification email to the Retirement Investment Specialist III.
3. Retirement Investment Specialist III keys the payment into BNY Mellon's secure portal, Nexen. The wire is approved by the Investment Operations Assistant Director or the Retirement Systems Investment Branch Manager. This must be completed by the due date specified by the investment manager from the email in step 1. If there is no due date given, this process is completed as soon as possible.
4. Retirement Investment Specialist III emails the investment manager and corresponding asset class director stating the wire has been approved.
5. Retirement Investment Specialist III prints (as a PDF document) the receipt from BNY Mellon showing wire details then combines the receipt, original invoice, approving email from Office of Investments staff, and the email created in step #4. The combined documents are saved in the Investment drive.

<u>Fee Recalculations for Invoiced Fees</u>

All Public Equity manager fees are paid through the invoicing process. The Public Equity Portfolio Manager compares the invoiced amount to his recalculation according to the contracted fee schedule with the following steps:

1. Generates the Statement of Changes in Net Assets from Nexen for each month in the quarter to calculate the quarter end AUM. This is done for the Pension and Insurance funds administered by each investment manager.
2. Prorates contributions and withdraws made within the month based on the ratio of days in the month that assets were managed. This proration adjusts the given month's AUM.
3. Calculates the total average AUM with any adjusted AUM based on the summation the Pension and Insurance balances.

4. Applies the fee schedule to the total average AUM calculated in the step above to determine the total fee owed. Below is an example from the worksheet created by the Public Equity Portfolio Manager showing how the average AUM is calculated and applied to a fee schedule.

7/31	Market Value-PENSION		290,774,973.30
	Market Value-INSURANCE		140,738,046.83
8/31	Market Value-PENSION		278,181,970.20
	Market Value-INSURANCE		134,643,349.52
9/30	Market Value-PENSION		$251,744,510.86
	Market Value-INSURANCE		$121,848,669.12
	Avg Market Value		405,977,173.28
	First $200 Million	0.39%	$195,000.00
	Over $200 Million	0.37%	190,528.89
			$385,528.89

5. Splits the total fee owed into proportional Pension and Insurance specific amounts. Each fund's portion is found by dividing the fund's average balance by the average market value. The resulting percentage is then multiplied by the total fee to get the fund specific amount owed.

Pension and Insurance Breakdown		
PENSION % of Total MV		67.38%
INSURANCE %t of Total MV		32.62%
Fees Billed to PENSION		$259,788.10
Fees Billed to INSURANCE		$125,740.78
		CHECK

6. Compares the recalculated amount to the invoiced amount. If the difference between the recalculation and invoiced amount is within five basis points (0.05%), the invoice is approved, and a screen shot of the recalculation is printed to PDF and combined with the original invoice and the corresponding Statement of Change in Net Assets into one document. This document is sent to the Retirement Investment Specialist III to show approval of fees charged.

The Fixed Income and Specialty Credit Portfolio Manager recalculates invoiced manager fees for Specialty Credit Fixed Income through the following process:

1. Generates Statement of Change in Net Assets from Nexen for each month in the quarter. This is done for Pension and Insurance.
2. Enters each AUM in the worksheet created maintained by the Fixed Income and Specialty Credit Portfolio Manager.
3. Applies the fee rate to the average monthly AUM for the corresponding quarter and determines the difference between the recalculated amount and the invoiced amount. The recalculated amount should be within 5% of the invoiced amount.
4. Combines the screen shot of work completed, Statement of Changes in Net Assets, and original invoice. Uploads this information to SharePoint.

Non-Invoiced Fees

The CIO and Deputy CIO oversee reviewing manager fees for Private Equity, Real Estate, Real Return, and some Specialty Credit managers who do not use invoices to pay manager fees. Fees identified in manager financial statements are checked for reasonability by the CIO and Deputy CIO against the contracted fee schedule. These fees are not recalculated. Non-invoiced fees do not need direct approval from the CIO or Deputy CIO because they are not paid from the master trust cash accounts like invoiced fees. Action is only required if an issue is noted by the CIO or Deputy CIO during their reasonability review. In those instances, the CIO or Deputy CIO will reach out to the external investment manager to resolve the noted concern. Past fees can be checked, if needed, by pulling the Statement of Change in Net Assets report, the investment manager's quarterly statement, investment manager's transparency report, and corresponding fee schedule for the quarterly fee in question.

Comparing BNY Mellon Reported Fees to Investment Manager Reported Fees

To ensure that BNY Mellon keyed the information correctly, a Retirement Investment Specialist III finds the difference between fees reported on the manager's Statement of Change in Net Assets and the manager's quarterly or monthly report, which shows how much they charged in management fees. If these differ, Investment Operations staff will ask BNY Mellon for an explanation as well as request a correction to any error found.

Comparing Accruals to Payments Made

The BNY Mellon Accounting Team accrues fees only for investment managers who invoice KPPA or investment managers that use unit redemptions fees based on the fee schedule on a monthly basis using the BNY Mellon month end valuation. Variations between the BNY Mellon Accounting Team's calculations and the investment manager's calculations from invoices are often caused by differences in valuation timing and frequency because many investment managers use daily valuations as opposed to monthly or quarterly valuations. Once per quarter, Investment Operations staff verify that the BNY Mellon Accounting Team accrued these fees correctly and backed out any needed adjustments representing the difference between the BNY Mellon Accounting Team calculation and the investment manager's calculation shown in invoices.

All needed information for this check is found in the drilldown of the Statement of Change in Net Assets report generated in Nexen. The Retirement Systems Investment Branch Manager completes this task and can drill into the "investment advisory fees," which shows all posted accruals and actual payments made within the quarter along with any adjustments made by the BNY Mellon Accounting Team. The sum of accruals and adjustments should equal the sum of invoices paid. An Investment Operations team member sends the completed work to the Accounting Assistant Director of Investment Operations for review and approval through email. No variations are acceptable.

Quarterly Management Fee Report for Website

Starting in 2017, the Accounting Assistant Director of Investment Operations or the Retirement Systems Investment Branch Manager began generating a quarterly report from Nexen, which shows the fees and market values of each account through the reported quarter. This report is a specialized version of the KPPA Expenses - General Ledger Detail and only select Investment Operations staff have access to this report. This worksheet is used to check the reasonability of fees charged by recalculating the fee rate used by dividing the fees charged by the AUM shown on the report. This recalculation is then annualized and compared to the contracted fee schedule of each account. A variance of five basis points is allowed. Anything that over this range is noted for further review by the portfolio manager for the asset class.

Anything in de minimis status, which is defined as a manager overseeing less than 10 basis points of the overall AUM for the Pension or Insurance fund, is combined into one line item for each asset class that needs the line item. Any funds which are internally managed are also combined into their own line item for the report. Finally, the version of this file from BNY Mellon is formatted to be posted on the KPPA website. Investment Operations staff email the whole file showing all work and corresponding notes to all Office of Investments staff for their review. The Retirement Systems Investment Branch Manager logs a web help desk ticket with only the final version of the file attached after the Office of Investments approves the file. KPPA Division of Communications staff upload the file from the ticket to KPPA's website.

Reporting to the Board

After the creation of separate CERS and KRS boards, a report showing individual plan management fee totals per assets class was requested. Since this was just recently requested, the process to make this report is currently being developed. There are efforts for this report to be directly generated from Nexen, but the completion of this request is unknown at this time. The plan specific allocations of investment advisory fees in the report that is presented to the Boards equals the asset class total from the corresponding management fee report that is posted to the KPPA website.

Kentucky Public Pensions Authority

Review of Investment Manager Fees

Management Letter

Issued November 17, 2023

Lead Auditor: Madeline Evans

Acronyms

The following acronyms will be used throughout the management letter:

1. KPPA - Kentucky Public Pensions Authority
2. CERS - County Employees Retirement System
3. KRS - Kentucky Retirement System
4. CEO - Chief Executive Officer
5. CIO - Chief Investment Officer
6. CFO - Chief Financial Officer
7. KPPA Management Team - KPPA Executive Director, KPPA Deputy Executive Director, KPPA Executive Director – Office of Benefits, and KPPA CFO
8. Investment Operations – KPPA Division of Accounting, Investment Operations Branch
9. CFA – Chartered Financial Advisor

Objective

The objectives of our Review of Investment Manager Fees audit were to ensure internal controls have been designed and are operating effectively and efficiently. We also ensured compliance with applicable state and federal statutes and regulations as well as policies established by the KPPA, CERS, and KRS Boards and procedures developed by KPPA staff.

Other Matters Noted

In addition to the recommendations included in the final report for the Review of Investment Manager Fees, we noted three recommendations that we wanted to communicate to management. These items will be reviewed during follow-up engagements and/or during a review of open recommendations.

1. **The Office of Investments staff member responsible for recalculating fees or performing the reasonability test for each asset class should document the procedures followed to complete the task.**
2. **For each asset class, the CIO should work with Portfolio Managers and the Investment Committees, if needed, to establish allowable variations between the contracted rate and the charged rate. This standardized variance should be documented for future reference.**
3. **Investment Operations staff should update procedures related to the creation of the quarterly report that is posted to the KPPA website.**

During the audit we noted the following:

1. The Office of Investments has not documented procedures related to recalculating fees for invoiced managers. It was indicted that this is because each Portfolio Manager has his own way to recalculate invoiced fees or check the reasonability for non-invoiced fees. Since no one else completes the tasks, staff have not taken the time to document the procedures. If a new Portfolio Manager is hired, the incoming employee would not have a centralized place to review guidance on how recalculate invoiced fees or check the reasonability for non-invoiced fees. Additionally, there is not a centralized place for staff to review nuanced terms and conditions for each investment manager contract or a history of past fee schedules.
2. The Office of Investments staff do not use the same acceptable variance between fees charged and fees recalculated when determining the reasonability of the fee charged. Staff stated that some asset classes are more complex than others, so an "across the board" standardized acceptable variance has not been established. Without a standardized acceptable variance between fees charged and calculated fees, investment managers may be unintentionally held to different standards. Additionally, staff may fail to identify a difference that is unacceptable to KPPA management and Trustees.
3. Procedures for preparing the quarterly report that is posted to the KPPA website do not explain the items outlined below. Should a new employee be required to complete the quarterly report for the KPPA website, the individual may not be able to accurately complete the report, especially regarding items that need special considerations.

a. The requirement that the fee schedule in the worksheet be approved at the beginning of each fiscal year.
b. How to determine if an investment manager is in a runoff or liquidated status and how these statuses cause recalculated fee rates to not match the contracted fee rate.
c. How to determine if an investment manager should be in de minimis status.
d. Guidance on how to compare the recalculated fee rate to the scheduled rate if the fee schedule has several conditions that go into the fee calculation.
e. Explanation that contributions and distributions may cause the recalculated fee rate to be outside the acceptable range and the steps to take to verify that this is the cause of an unexpected fee calculation.
f. A listing of the accounts that are internally managed.

200 Kentucky Administrative Regulation 38:070 states, "Each fiscal officer shall develop and document internal controls to both prevent and detect abuse, unintentional errors, and the fraudulent disbursement of funds or use of state assets...An internal control plan shall include...Detailed procedures to be followed in the performance of job duties and functions to emphasize duties that comprise the overall framework of accountability and internal controls, and to help ensure the continuation of agency operations in the event of staffing changes...."

Management Response:
The Office of Investments and the Investment Operations Branch concur with the finding and recommendation. Currently, each Portfolio Manager has established procedures for reviewing and reconciling fees for invoiced managers with the degree of documentation for these procedures varying by Portfolio Manager and asset class. All fee information and methodologies are readily available in the Investment Manager Agreements or legal agreements accessible by all Investment staff and any newly hired Portfolio Manager would be expected to have the experience and skills to review these documents and accurately recalculate the fees of any manager. However, we will work to establish standard acceptable tolerances by asset or sub-asset class and investment stage.

This report is intended solely for use by the KPPA Audit Committee; the KPPA, CERS, and KRS Boards; the CERS CEO; the KRS CEO; the KPPA Management Team; the KPPA Office of Investments, and the KPPA Division of Accounting. This report is not intended to be, and should not be, used by anyone other than the specified parties. All final reports are subject to Open Records Requests.

Kentucky Public Pensions Authority

Quality Assurance and Improvement Plan – Self Assessment

As of September 22, 2023

Issued October 19, 2023

Acronyms

The following acronyms will be used throughout the report:

1. Standards - *International Standards for the Professional Practice of Internal Auditing*
2. QAIP – Quality Assurance Improvement Plan
3. KPPA - Kentucky Public Pensions Authority
4. CERS - County Employees Retirement System
5. KRS - Kentucky Retirement System
6. CEO – Chief Executive Officer
7. IIA - Institute for Internal Auditors

Background

The *Standards* require that an external quality assessment of an internal audit activity must be conducted at least once every five years by a qualified, independent assessor or assessment team from outside the organization. The qualified assessor or assessment team must demonstrate competence in both the professional practice of internal auditing and the quality assessment process. The quality assessment can be accomplished through a full external assessment or a self-assessment with independent validation.

Opinion

It is our overall opinion that the Division of Internal Audit partially conforms with the *Standards* and generally conforms with the Code of Ethics.

A detailed list of conformance with the individual standards and the Code of Ethics is shown in appendix A.

The Institute of Internal Auditors' *Quality Assessment Manual for the Internal Audit Activity* suggests a scale of three rankings when opining on the internal audit activity: "Generally Conforms," "Partially Conforms," and "Does Not Conform."

1. "Generally Conforms" means that an internal audit activity has a charter, policies, and processes that are judged to be in conformance with the *Standards* and/or the Code of Ethics.
2. "Partially Conforms" means that deficiencies in practice are noted that are judged to deviate from the *Standards* and/or the Code of Ethics; however, these deficiencies did not preclude the internal audit activity from performing its responsibilities in an acceptable manner.
3. "Does Not Conform" means that deficiencies in practice are judged to deviate from the *Standards* and/or the Code of Ethics and are significant enough to seriously impair or preclude the internal audit activity from performing adequately in all or in significant areas of its responsibilities.

Objectives

1. The principle objective of the quality assessment was to assess the Division of Internal Audit's conformance with the *Standards* and the Code of Ethics.
2. The Division of Internal Audit also evaluated its effectiveness in carrying out its mission, as set forth in the internal audit charter; identified successful internal audit practices demonstrated by the Division of Internal Audit; and identified opportunities for continuous improvement to enhance the efficiency and effectiveness of the infrastructure, processes, and the value to their stakeholders.
3. The Division of Internal Audit will need to request that an external independent assessor validate the results of the self-assessment. The IIA has a process in place to assist with this request.

Scope

1. The scope of the quality assessment included the Division of Internal Audit, as set forth in the internal audit charter and approved by the KPPA Board, which defines the purpose, authority, and responsibility of the Division of Internal Audit.
2. The quality assessment was concluded on September 22, 2023, and provides the Audit Committee with information about the Division of Internal Audit as of that date.
3. The *Standards* and the Code of Ethics in place and effective as of June 30, 2023, were the basis for the quality assessment.

Methodology

The Self-Assessment was completed by two internal audit staff members and the review was conducted by the two staff members currently working towards achieving the Certified Internal Auditor license. The results were presented to the Chief Auditor, who provided the management response to the findings. The Division of Internal Audit utilized the Quality Assessment Manual for the Internal Audit Activity published by the IIA to complete the self-assessment. All questionnaires and surveys were designed by the IIA and internal audit staff used these items in their entirety. Information designed by the IIA and completed by internal audit staff included the following items:

1. Complete and detailed planning guides,
2. Survey guides,
3. Testing programs,
4. Evaluation summary which was used to document all conclusions and observations, and
5. Self-assessment report template

Categories of Observations

Observations in the Self-Assessment Results section are divided into three categories:

1. Successful Internal Audit Practices – Areas where the Division of Internal Audit is operating in a particularly effective or efficient manner.
2. Opportunities for Continuous Improvement – Observations of opportunities to enhance the efficiency or effectiveness of the Division of Internal Audit's infrastructure of processes. These items do not indicate a lack of conformance with the *Standards* or the Code of Ethics, but rather offer suggestions on how to better align with criteria defined in the *Standards* or Code of Ethics. They may also be operational ideas based on the experiences obtained while working with other internal audit activities.
3. Gaps to Conformance – Areas identified where the Division of Internal Audit is operating in a manner that falls short of achieving one or more major objectives and attains an opinion of "partially conforms" or "does not conform" with the Standards or the Code of Ethics. These items will include recommendations for actions needed to be "generally in conformance," and will include a response from the Division of Internal Audit with an action plan to address the gap.

Use of Report

This report is intended solely for use by the KPPA Audit Committee, the CERS and KRS Boards and CEOs, and the Division of Internal Audit. This report is not intended to be, and should not be, used by anyone other than the specified parties. All final reports are subject to Open Records Requests.

Self-Assessment Results

Standards:	1000 and 1010
Overall Rating:	Generally Conforms
Successful Internal Audit Practices:	• The internal audit charter is comprehensive and is consistent with the Mission of Internal Audit and the mandatory elements of the *Standards*. • There is specific language that recognizes the mandatory nature of the Core Principles for the Professional Practice of Internal Auditing, the Definition of Internal Auditing, the Code of Ethics, and the *Standards*. • The charter is reviewed and approved annually by the Audit Committee and ratified by the Board. As a result, the charter is updated in a timely manner when changes in the IPPF become effective.
Opportunities for Continuous Improvement:	None noted
Gaps to Conformance:	None noted
Internal Audit Response:	Not required

Standards:	1100 to 1130
Overall Rating:	Generally Conforms
Successful Internal Audit Practices:	• New reporting structure of the Chief Auditor position ensures independence within the agency. • Division of Internal Audit takes steps to ensure staff that transfer from other agency divisions do not complete audits over their former division for at least one year.
Opportunities for Continuous Improvement:	None noted
Gaps to Conformance:	None noted
Internal Audit Response:	Not required

Standards:	1200 to 1230
Overall Rating:	Generally Conforms
Successful Internal Audit Practices:	• The Division of Internal Audit is made of up individuals with different backgrounds and expertise, which provides a wide range of skills and knowledge. • Four of the five staff are currently working towards a professional certification.
Opportunities for Continuous Improvement:	None noted
Gaps to Conformance:	None noted
Internal Audit Response:	Not required

Standards:	1300 to 1322
Overall Rating:	Partially Conforms
Successful Internal Audit Practices:	The Division of Internal Audit acknowledges that this area needs strengthening and has begun taking steps to complete the internal and external assessments.
Opportunities for Continuous Improvement:	• Continue working on the development of the QAIP. • Utilize surveys after engagements as a part of the assessment process.
Gaps to Conformance:	An external assessment or internal assessment with validation has not been completed in the past five years.
Internal Audit Response:	1. We concur with this gap to conformance with the *Standards*. We will work with KPPA management on the procedures to obtain an internal assessment with validation. We intend to have this completed during fiscal year 2024. 2. We have developed surveys that we will begin sending out with the next completed projects.

Standards:	2000 to 2070
Overall Rating:	Generally Conforms
Successful Internal Audit Practices:	• The annual audit plan is risk-based. • Since the internal audit activity does not include an IT expert, review of the IT infrastructure is outsourced to ensure a complete and accurate review is performed. • Internal audit procedures are documented in detail and kept up to date as changes are needed.
Opportunities for Continuous Improvement:	• Develop a strategic plan specific to the Division of Internal Audit. • Ensure all relevant stakeholders are consulted when preparing the risk assessment. • Ensure the risk assessment specifically address areas that need to be reviewed for effectiveness and efficiency. • Add the number of internal audit resources needed for engagements identified on the risk assessment.
Gaps to Conformance:	None noted
Internal Audit Response:	We concur with the Opportunities for Continuous Improvement and will take the following action: 1. Internal Audit will work with the Audit Committee on a strategic plan. 2. A new process is in place for the risk assessment and feedback will be obtained from all relevant stakeholders. 3. We will update the risk assessment report to ensure it includes areas that need to be reviewed for effectiveness and efficiency. We will also include the number of internal audit resources needed for each engagement.

Standards:	2100 to 2130
Overall Rating:	Partially Conforms
Successful Internal Audit Practices:	The internal audit activity evaluates controls for effectiveness and efficiency and promotes continuous improvement.
Opportunities for Continuous Improvement:	Perform a review of organizational governance.
Gaps to Conformance:	None noted
Internal Audit Response:	We concur with the Opportunities for Continuous Improvement. We discussed a governance audit at a recent Audit Committee Meeting (May 2023). We will ensure this item is included on the next risk assessment. We do take steps to look at governance with each audit engagement.

Standards:	2200 to 2240
Overall Rating:	Generally Conforms
Successful Internal Audit Practices:	• Planning procedures are well documented. Templates have been established to ensure consistency. • New audit software allows reviewers to easily connect identified risks, established controls, and testing procedures.
Opportunities for Continuous Improvement:	None noted
Gaps to Conformance:	None noted
Internal Audit Response:	Not required

Standards:	2300 to 2340
Overall Rating:	Generally Conforms
Successful Internal Audit Practices:	• Work papers are prepared from templates to help ensure consistency and accuracy. • New audit software makes it easy to see who prepared workpapers, who performed the review, and when the review was performed.
Opportunities for Continuous Improvement:	Establish a formal root-cause analysis.
Gaps to Conformance:	None noted
Internal Audit Response:	We concur with the Opportunities for Continuous Improvement. A formal root-cause analysis will be developed. Procedures to complete this analysis will be added to our Process Documentation SharePoint site.

Standards:	2400 to 2450
Overall Rating:	Generally Conforms
Successful Internal Audit Practices:	Final audit reports include the engagement's objectives, scope, and results. The reports also include a background of the process under review. For complex processes, a detailed background and testing methodology is included as an appendix.
Opportunities for Continuous Improvement:	An overall opinion is tracked in the audit software, but this opinion is not included in the final report. However, the final audit reports contain elements of an overall opinion.
Gaps to Conformance:	None noted
Internal Audit Response:	We concur with the Opportunities for Continuous Improvement. The template of the reports will be updated to pull in the overall audit opinion.

Standards:	2500
Overall Rating:	Generally Conforms
Successful Internal Audit Practices:	• A new process has been implemented that makes it easy to track open findings and also allows for reports to be run regarding all issues (open and closed). • A follow-up on open audit findings is completed annually and the results are presented to KPPA management and the Audit Committee.
Opportunities for Continuous Improvement:	None noted
Gaps to Conformance:	None noted
Internal Audit Response:	Not required

Standards:	2600
Overall Rating:	Generally Conforms
Successful Internal Audit Practices:	The Charter for the Audit Committee outlines a process for the Division Director of Internal Audit to bring concerns to the Audit Committee if the Division Director of Internal Audit believes KPPA management has accepted a level of risk that may be unacceptable to the organization.
Opportunities for Continuous Improvement:	None noted
Gaps to Conformance:	None noted
Internal Audit Response:	Not required

Standards:	Code of Ethics
Overall Rating:	Generally Conforms
Successful Internal Audit Practices:	The Division of Internal Auditor follows the Code of Ethics and attest to this annually. This attestation is presented to the Audit Committee on annually.
Opportunities for Continuous Improvement:	None noted
Gaps to Conformance:	None noted
Internal Audit Response:	Not required

Appendix A

Overall Evaluation	Generally Complies	Partially Complies	Does Not Comply
		X	

Code of Ethics	Generally Complies	Partially Complies	Does Not Comply
	X		

Attribute Standards 1000 through 1300		Generally Complies	Partially Complies	Does Not Comply
1000	Purpose, Authority, and Responsibility	X		
1010	Recognizing Mandatory Guidance in the Internal Audit Charter	X		
1100	Independence and Objectivity	X		
1110	Organizational Independence	X		
1111	Direct Interaction with the Board	X		
1112	Chief Audit Executive Roles Beyond Internal Auditing	X		
1120	Individual Objectivity	X		
1130	Impairment to Independence or Objectivity	X		
1200	Proficiency and Due Professional Care	X		
1210	Proficiency	X		
1220	Due Professional Care	X		
1230	Continuing Professional Development	X		
1300	Quality Assurance and Improvement Program		X	
1310	Requirements of the Quality Assurance and Improvement Program		X	
1311	Internal Assessments		X	
1312	External Assessments			X
1320	Reporting on the Quality Assurance and Improvement Program			X
1321	Use of “Conforms with the International Standards for the Professional Practice of Internal Auditing”	X		
1322	Disclosure of Nonconformance	X		

Performance Standards 2000 through 2600		Generally Complies	Partially Complies	Does Not Comply
2000	Managing the Internal Audit Activity	X		
2010	Planning	X		
2020	Communication and Approval		X	
2030	Resource Management	X		
2040	Policies and Procedures	X		
2050	Coordination and Reliance	X		
2060	Reporting to Senior Management and the Board	X		
2070	External Service Provider and Organizational Responsibility for Internal Auditing		X	
2100	Nature of Work		X	
2110	Governance		X	
2120	Risk Management	X		
2130	Control	X		
2200	Engagement Planning	X		
2201	Planning Considerations	X		
2210	Engagement Objectives	X		
2220	Engagement Scope	X		
2230	Engagement Resource Allocation	X		
2240	Engagement Work Program	X		
2300	Performing the Engagement	X		
2310	Identifying Information	X		
2320	Analysis and Evaluation		X	
2330	Documenting Information	X		
2340	Engagement Supervision	X		
2400	Communicating Results	X		
2410	Criteria for Communicating	X		
2420	Quality of Communications	X		
2421	Errors and Omissions	X		
2430	Use of "Conducted in Conformance with the *International Standards for the Professional Practice of Internal Auditing*"	X		
2431	Engagement Disclosure of Nonconformance	X		
2440	Disseminating Results	X		
2450	Overall Opinions		X	
2500	Monitoring Progress	X		
2600	Communicating the Acceptance of Risks	X		

Officers & Board

As a professional association consisting of internal auditors dedicated to providing comprehensive professional development and networking opportunities for its members, the Association of Public Pension Fund Auditors does not respond to requests for comment or opinion on issues affecting public pension systems. All other correspondence to APPFA Board, email here.

President (Term expires 12/31/2024)
Leslie Nagel, Internal Audit Director
Minnesota Teachers Retirement Association

Vice President (Term expires 12/31/2024)
Nicki Russell, Chief Auditor
Missouri State Employees' Retirement System

Secretary (Term expires 12/31/2023)
Cathleen Davis, Chief Internal Auditor
Arizona Public Safety Personnel Retirement System

Treasurer (Term expires 12/31/2025)
Darlene Dempsey, Associate Auditor
New York State Teachers Retirement System

Immediate Past President (Term expires 12/31/2024)
Currently Open

Quick Links

Upcoming Events

No events

View Full Calendar

Board Member (Term expires 12/31/2025)
Cheryl Cervantes-Dietz, Chief Auditor
California State Teachers' Retirement System

Board Member (Term expires 12/31/2025)
Amanda Jenami, Chief Audit Executive
Teachers Retirement System of Texas

Webmaster (Term expires 12/31/2025)
Matthew Priestas, Principal Auditor - Information Technology and Project Management
Virginia Retirement System

Leadership History
Officers serve a two-year term commencing on January 1 of the first year and ending on December 31 of the second year. The President and Vice-President are elected in even years; the Secretary, Treasurer, and Webmaster are elected in odd years. Board Members serve a three-year term commencing on January 1 of the first year and ending on December 31 of the third year.

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Association of Public Pension Fund Auditors

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Publications & Resources

APPFA Publications

- Statements of Key Investment Risks and Common Practices to Address Those Risks
- Operational Risks of Defined Benefit and Related Plans and Controls to Mitigate Those Risks
- Model Audit Committee Charter
- Model Internal Audit Department Charter
- Model Code of Conduct and Ethics Policy
- And more....

Other Publications

- Building an Effective Internal Audit Activity in the Public Sector (IIA)
- Unique Aspects of Internal Auditing in the Public Sector (IIA)

Internet Resources

- American Institute of CPAs (AICPA)
- CFA Institute
- Association of Certified Fraud Examiners
- Association of Government Accountants (AGA)
- Bank for International Settlement
- BenefitsLink
- Bloomberg
- Corporate Governance Net

Quick Links

Upcoming Events

No events

View Full Calendar

- Council on Institutional Investors
- FASB
- GAO
- GAO Report – Hedge Funds and Private Equity
- GASB
- Government Finance Officers Association (GFOA)
- Information Systems Audit and Control Association (ISACA)
- Institute of Internal Auditors (IIA)
- Internal Revenue Service
- Internal Revenue Service – Retirement Plans
- International Foundation of Employee Benefit Plans (IFEBP)
- International Organization of Securities Commissions
- Investor glossary
- Library of Congress
- McGraw Hill Financial
- NASDAQ
- National Association of Auditors, Comptrollers, and Treasurers (NASACT)
- National Association of Government Defined Contribution Administrators (NAGDCA)
- National Association of Public Pension Attorneys (NAPPA)
- National Association of Securities Dealers (NASD)
- National Association of State Boards of Accountancy (NASBA)
- National Council on Teacher Retirement (NCTR)
- National Association of State Retirement Administrators (NASRA)
- New York Stock Exchange
- Pensions & Investments
- Plan Sponsor
- Public Company Accounting Oversight Board (PCAOB)
- SEC – EDGAR
- SSA Home Page
- Society of Actuaries
- Standard & Poor's
- Texas State Agency Internal Audit Forum (Peer Review Info)

Association of Public Pension Fund Auditors

Association of Public Pension Fund Auditors (APPFA) Professional Development Conference

18 CPE Hours

November 5-8, 2023

Phoenix, Arizona

Crowne Plaza Hotels & Resorts – Phoenix Airport

4300 East Washington Street, Phoenix, Arizona 85034

Tel: 855-586-8475

2023 Conference Agenda

Date	Event*	Location
	Sunday, November 5	
6:00 PM – 9:00 PM	***Welcome Reception**	Crowne Plaza Hotel
	Monday, November 6	
7:30 AM – 8:30 AM	***Breakfast & Networking**	Crowne Plaza Hotel
8:30 AM – 8:45 AM	**1a. *Opening Remarks** Leslie Nagel, CIA, CPA, CEBS, APPFA President	
8:45 AM – 9:20 AM	**1b. Welcome Remarks – Arizona Public Safety Personnel Retirement System (PSPRS)** Michael Townsend, Administrator | PSPRS	
9:20 AM – 10:00 AM	**1c. Welcome Remarks – Arizona State Retirement System (ASRS)** Paul Matson, Director |ASRS	
10:00 AM – 10:15 AM	*** Networking Break (15-minute)**	
10:15 AM – 12:00 PM	**1d. Roll Call of the States** Alex Deal | APPFA Program Committee	
12:00 PM – 1:00 PM	***Lunch & Networking (1-hour)**	Crowne Plaza Hotel
1:00 PM – 1:50 PM	**1e. Pension Risks and the Impact on Internal Audit** Clark Partridge, CPA, CGFM, Financial Consultant | PSPRS	
1:50 PM – 2:45 PM	**1f. Assurance by Design** Morgan Kroeger, CPA, CFE, CISA, Manager | Deloitte Jordan Schumann, Manager | Deloitte	
2:45 PM – 3:15 PM	*** Networking Break with Snacks & Refreshments (30-minutes)**	
3:15 PM – 3:50 PM	**1g. ASRS and PSPRS Investments** Mike Viteri, Chief Investment Officer | ASRS	
3:50 PM – 4:30 PM	**1h. ASRS and PSPRS Investments** Mark Steed, Chief Investment Officer | PSPRS	
4:30 PM – 5:00 PM	***APPFA Business Meeting**	Crowne Plaza Hotel
6:00 PM – 9:00 PM	***Group Dinner** (see page 14)	Rustler's Rooste

***Items marked with an * do not qualify for CPE.**
Times have been adjusted to allow for speaker transitions.

2023 Conference Agenda

Date	Event*	Location
	Tuesday, November 7	
7:30 AM – 8:30 AM	***Breakfast & Networking**	Crowne Plaza Hotel
8:30 AM – 8:45 AM	***APPFA Housekeeping** Leslie Nagel, CIA, CPA, CEBS | APPFA President	
8:45 AM – 10:00 AM	**2a. Best, Worst, and Somewhere In-Between Practices from an Auditor, Manager, Director, and Guy who Sometimes Accidentally found themselves In Charge** Mike Jacka, Chief Creative Pilot | FPACTS	
10:00 AM – 10:15 AM	***Networking Break (15-minutes)**	
10:15 AM – 11:05 AM	**2b. Data Visualization for Pension Systems** Brittany Smith, CPA, CIA, Manager State & Local Government | CLA Mitch Thompson, Director of Digital Growth | CLA	
11:05 AM – 12:00 PM	**2c. How Internal Audit & External Audit Can Work Together** Brittany Smith, CPA, CIA, Manager State & Local Government | CLA Cathleen Davis, CIA, CFE, Chief Internal Auditor | PSPRS Rosie Tomforde, CPA, CFE, CGFM, Audit Officer | ASRS	
12:00 PM – 1:00 PM	***Lunch & Networking (1-hour)**	Crowne Plaza Hotel
1:00 PM – 2:45 PM	**2d. What You Do Matters** Todd Larson, EdD, Director | What You Do Matters Institute	
2:45 PM – 3:15 PM	*** Networking Break with Snacks & Refreshments (30 minutes)**	
3:15 PM – 4:10 PM	**2d. What You Do Matters (Continued)** Todd Larson, EdD, Director | What You Do Matters Institute	
4:10 PM – 5:00 PM	**2e. Maturing an Enterprise Risk Management (ERM) Function** APPFA Best Practices Committee	
	Dinner is on your own | Use the link for dinner on your own, for restaurants located in Greater Phoenix	

***Items marked with an * do not qualify for CPE.**
Times have been adjusted to allow for speaker transitions.

2023 Conference Agenda

Date	Event*	Location
	Wednesday, November 8	
7:30 AM – 8:30 AM	***Breakfast & Networking**	Crowne Plaza Hotel
8:30 AM – 8:45 AM	***APPFA Housekeeping** Leslie Nagel, CIA, CPA, CEBS | APPFA President	
8:45 AM – 10:00 AM	**3a. Auditing Investments: Knowing Just Enough to be Dangerous** Donal Long, Managing Director | Protiviti	
10:00 AM – 10:15 AM	*** Networking Break (15-minute)**	
10:15 AM – 11:05 AM	**3b. Panel Discussion: How Public Pension Funds are Utilizing Data Analytics with Internal Audit** Amanda Jenami, CPA, CIA, CISA, CIDA, CHIAP, CFSA, CFE, CGAP, CRMA, CCSA, Chief Audit Executive | TRS	
11:05 AM – 12:00 PM	**3c. APPFA Members Audit Management Software Usage – Pros, Cons, Tips, and Tricks** APPFA Best Practices Committee	
12:00 PM – 12:15 PM	***Conference Closing** Leslie Nagel, CIA, CPA, CEBS, APPFA President	

The link for the Conference APP will be provided to registered attendees closer to the conference date. The APP will include session descriptions, learning objectives, speaker information, session surveys, overall conference survey, and other relevant information.

Conference Contacts

Conference Hosts
Cathleen Davis, PSPRS, cdavis@psprs.com
Harold Mackey, ASRS, haroldm@azasrs.gov

APPFA Contacts
APPFA Vice-President: Nicki E. Russell, MOSERS, nickir@mosers.org
Webmaster and/or Conference Registration Contact, Matt Priestas, VRS, webmaster@appfa.org

Event and Session Information
Speaker Information will be included in Conference APP

November 5, 2023

Welcome Reception, 6:00 – 9:00 PM
Catch up and network with pension members and colleagues at the Sunday night welcome reception at the conference hotel (Crowne Plaza Hotel).
**This event does not qualify for CPE.*

November 6, 2023

Opening Remarks, 8:30 – 8:45 AM
Leslie Nagel, CIA, CPA, CEBS | APPFA President

The APPFA President will officially open the conference. Attendees will be reminded of conference or event information, announcements, encouragement to sign into each session to get CPE, and to complete the session surveys.
**This session does not qualify for CPE.*

Welcome Remarks & Plan Presentations, 8:45 – 10:00 AM
Michael Townsend, Administrator |PSPRS
Paul Matson, Director | ASRS

This session will provide attendees with an "Old West Arizona Welcome" from our conference hosts. The PSPRS Administrator and the ASRS Director will present highlights from their respective pension funds. Attendees will take away industry knowledge and learn more about the two major Arizona retirement systems.
Specialized Knowledge

Roll Call of the States, 10:15 – 12:00 PM
Alex Deal | APPFA Program Committee

Prior to the conference each attending system will complete a Roll Call of the States survey. A representative from each participating organization will introduce the attendees from their system. In addition, they may speak to the group about their current audit areas, ongoing projects, and any other relevant information (information on the Roll Call of the States may guide their presentation). Each presenter may discuss how they get results, overcome obstacles, and prepare for issues in their audit team. Attendees will take away information about audit topics and prompt networking by identifying peers working on similar projects or facing similar challenges. Individuals that are attending the conference and are non-members or do not have internal audit responsibilities should not attend this session.
Auditing (Governmental)

<u>Pension Risks and Impact on Internal Audit, 1:00 – 1:50 PM</u>
Clark Partridge, CPA, CGFM, Financial Consultant | PSPRS

This session explores the inherent risks and complexity associated with pension operations, as well as examples of internal audit roles and activities as a key part of the overall system of internal controls. Be ready to identify opportunities and ideas that can expand your effectiveness and increase your value. How can you help your organization win the ongoing battle with risk and inefficiency?
Auditing (Governmental)

<u>Assurance by Design, 1:50 – 2:45 PM</u>
Morgan Kroeger, CPA, CFE, CISA, Manager | Deloitte
Jordan Schumann, Manager | Deloitte

Is your pension system planning on implementing new information systems? Have they involved internal audit in the planning discussions? In this session, Deloitte will discuss how to build risk and control considerations into implementations up front. Including "controls" during an implementation can take many forms. True "controls readiness" considers controls throughout the implementation lifecycle, which sets an organization up for successful compliance post go-live. This session will dive into the role of internal audit during an implementation, questions internal audit should be asking, and common pitfalls in implementation. It is important to assess the control change impact and work alongside the implementation and functional teams to support control design and testing throughout the implementation lifecycle.
Information Technology

<u>ASRS and PSPRS Investments, 3:15 – 4:30 PM</u>
Mike Viteri, Chief Investment Officer |ASRS
Mark Steed, Chief Investment Officer | PSPRS

Join Arizona's Chief Investment Officers as they discuss investments, investment strategies, and impacts to the respective Systems.
Specialized Knowledge

<u>APPFA Business Meeting, 4:30 – 5:00 PM</u>
Leslie Nagel, CIA, CPA, CEBS | APPFA President

The APPFA members will meet to conduct the business of the organization, including membership changes, financial reports, future conference sites, budget approval, and election of officers and board members. <u>A representative from each member organization should attend the meeting.</u>
**This event does not qualify for CPE.*

<u>Group Dinner, 6:00 – 9:00 PM</u>

Off-site networking event and dinner at Rustler's Rooste. Dinner will be served Chuckwagon style, including BBQ ribs and chicken, along with mixed field salad and house dressing, cowboy beans, corn on the cob, and ranch rolls with butter. Campfire coffee, water, and tea are complimentary with the meal. After dinner expect a sweet treat of S'mores. Additional information on the group dinner is on page 14 of this brochure. **This event does not qualify for CPE.*

November 7, 2023

Housekeeping, 8:30 – 8:45 AM
Leslie Nagel, CIA, CPA, CEBS | APPFA President

Attendees will be reminded of conference or event information, announcements, encouragement to sign into each session to get CPE, and to complete the session surveys.
**This event does not qualify for CPE.*

Best, Worst, and Somewhere In-Between Practices from an Auditor, Manager, Director, and Guy who Sometimes Accidentally found themselves In-Charge, 8:45 – 10:00 AM
Mike Jacka, Chief Creative Pilot | FPACTS

In his thirty years with Farmers Insurance Internal Audit, Mike Jacka has seen some of the best and worst practices for internal audit. In fact, some of them were even his fault. In this light-hearted but information-packed presentation, Mike shares some of the truly groundbreaking approaches he has used, as well as the ideas and practices that just didn't quite work out so well. These experiences span the full range of internal audit activity including preliminary audit work, testing, report writing, and even relationship management, supervision, and personnel development. By the end of the presentation, every participant will leave with more than one idea on how to make their operation better (or what to avoid that might make it worse.)
Auditing (Governmental)

How Internal Audit & External Audit Can Work Together, 10:15 – 11:05 AM
Brittany Smith, CPA, CIA, Manager State & Local Government | CLA
Cathleen Davis, CIA, CFE, Chief Internal Auditor | PSPRS
Rosie Tomforde, CPA, CFE, CGFM, Audit Officer | ASRS

While internal audit and external audit are separate and distinct in their respective roles, responsibilities, and duties; there can be benefits from regular communication. Join us for an interactive panel as we discuss the advantages of coordination and collaboration, along with some challenges that may arise, between internal and external audit in public pension systems.
Auditing (Governmental)

Data Visualization for Pension Systems, 11:05 AM – 12:00 PM
Brittany Smith, CPA, CIA, Manager State & Local Government | CLA
Mitch Thompson, Director of Digital Growth, CLA

This session will provide information on how to apply data analytics and use data visualization in pension systems. Topics covered will include a brief overview of data analytics, data analytics tools used for business intelligence and data engineering, and practical applications for pensions. Attendees will learn how to apply data analytics to better visualize and understand benefit payments, refunds, census data, contributions, employer reporting and internal investment trading.
Information Technology

What You Do Matters, 1:00 – 4:10 PM
Todd Larson, EdD Director | What You Do Matters Institute

Public servants play a critical role in society because of their unique relationship to serve the public in an ethical and honorable manner. These professionals swear an oath to serve - an oath that brings life, action, and meaning to our daily actions and written United States Constitution.

When asked, most people state the role of public servants and police in our society is: to maintain order; be stewards of finance, ensure public safety; and the ethical function of society. In fact, the role of public service professionals is far greater than these acknowledged duties - at the core of what these professionals do is to defend and protect the freedoms guaranteed for all in the Constitution and ensure ethical practices. Our democracy is only as healthy as how well public service professionals do their job each and every day, with each and every encounter with one another, and public servants are stewards and charged with the responsibility to secure freedoms guaranteed to each of us and our communities.

Working in partnership with the United States Holocaust Memorial Museum in DC (USHMM), What You Do Matters Institute facilitates a course that can effectively be taught in local jurisdictions without having to travel to the Holocaust Museum in DC. Using museum quality exhibits to depict scenes from Nazi Germany and historical photographs of political, legal, and public servant activities from 1933 to 1942, the WYDM course examines how Germany incrementally progressed from a free and democratic society to a totalitarian biased state that trafficked, abused, and treated people with harsh brutality. The program is a facilitated discussion among participants of the Slippery Slope, the transformation in nine short years by public servants in Nazi Germany from protectors of all people to enforcers of Nazi ideology and collaborators in biased service, enforcement of racial laws, human trafficking, and deportations ending in genocide. The course culminates with a discussion of the crucial lessons from history that participants can apply to their day-to-day activities and to help define their relationship to the Constitution, their oath, and all the people they serve in our country today.

Conference attendees will receive a course workbook (digital delivery in the conference APP).

For more information, see the organization's website, www.wydminstitute.com
Behavioral Ethics

Note: This session will qualify for behavioral ethics for both CIA and CFE certifications. Please contact your state board of accountancy to determine if the ethics session qualifies for your ethics continuing education for a CPA license.

Maturing an Enterprise Risk Management (ERM) Function, 4:10 – 5:00 PM
APPFA Best Practices Committee

Given a volatile and changing risk landscape, pension stakeholders expect a proactive and robust ERM program. A mature ERM program can help the organization navigate uncertainties and enhance decisions. However, many of our systems have immature or developing ERM programs. Given Internal Audit's holistic view of risk, this panel will discuss ways that Internal Audit can contribute to the maturity of the ERM program.

The panel discussion will include:

- Tips for implementation of a new ERM program
- Key milestones to achieve as the ERM program matures
- Internal audit's role in the ERM program depending on its maturity level
- Time commitment from IA and other departments and the cost (software, consulting, etc.) of establishing an ERM program

Auditing (Governmental)

November 8, 2023

New Member Recognition/Housekeeping, 8:30 – 8:45 AM
Leslie Nagel, CIA, CPA, CEBS, APPFA President

New member systems will be recognized (if applicable) and any other celebratory comments will be shared. Attendees will be reminded of conference or event information, announcements, encouragement to sign into each session to get CPE, to complete the session surveys, and to complete the conference survey.
**This session does not qualify for CPE.*

Auditing Investments – Knowing Just Enough to be Dangerous, 8:45 – 10:00 AM
Donal Long, Managing Director | Protiviti

This session will cover auditing the investment lifecycle front-to-back. Starting from investment sourcing and research, through to managing tail risk on exits, the session will provide practical and actionable takeaways to ensure your investment audits are focused on the right risks and controls. Acknowledging that each pension fund may employ different strategies and approaches, the session will cover both public and private market investments, in addition to audit considerations both where investment decisions are managed in-house or by a third-party manager.
Auditing (Governmental)

Panel Discussion: How Public Pension Funds are Utilizing Data Analytics with Internal Audit, 10:15 – 11:05 AM
Amanda Jenami, CPA, CIA, CISA, CIDA, CHIAP, CFSA, CFE, CGAP, CRMA, & CCSA
Chief Audit Executive | TRS

Discover how organizations are adapting to the data explosion and leveraging data analytics for effective Internal Audit practices. Panel speakers represent various public pension funds and include members from the APPFA Best Practices Committee Data Analytics Subgroup. The panel will share their experiences integrating data analytics and the resulting benefits. Don't miss this opportunity to gain experience from your peers and explore the powerful combination of data analytics and Internal Audit.

What you'll take away:

- Understand how Data Analytics can increase audit coverage and transform Internal Audit into valuable business partners

- Gain insights on the critical success factors for developing and integrating a Data Analytics program into Internal Audit
- Explore buy-in strategies and the client perspective on Internal Audit's Data Analytics projects
- Learn about features and limitations of various analytics tools used by different pension funds to perform Data Analytics
- Explore effective ways to communicate Data Analytics results with clients and the Board
- Discover specific examples of successful bots and algorithms in pension benefits, investment, and health insurance

Auditing (Governmental)

APPFA Members Audit Management Software Usage – Pros, Cons, Tips, and Tricks, 11:05 – 12:00 PM
APPFA Best Practices Committee | Data Analytics Subgroup

A team of APPFA members will discuss the different audit management software products being utilized as well as tips and observed limitations. The panelists will share their experiences around software upgrades/implementations, how they worked to overcome any challenges that arose and functionality they find particularly beneficial. Attendees will take away pros and cons of different audit management software solutions, including general implementation/maintenance costs along with additional considerations when making an audit software selection to support the operational efficiency of the audit experience.
Auditing (Governmental)

What is Next? Glad you Asked!

The APPFA Program Committee along with members from the Maryland State Retirement and Pension System (i.e., conference hosts) are working on your Spring 2024 Conference. You can guarantee it will be a fantastic mix of pension related topics and emerging issues in the internal audit profession. Stay tuned for more information.

SEE YOU IN MARYLAND!!!

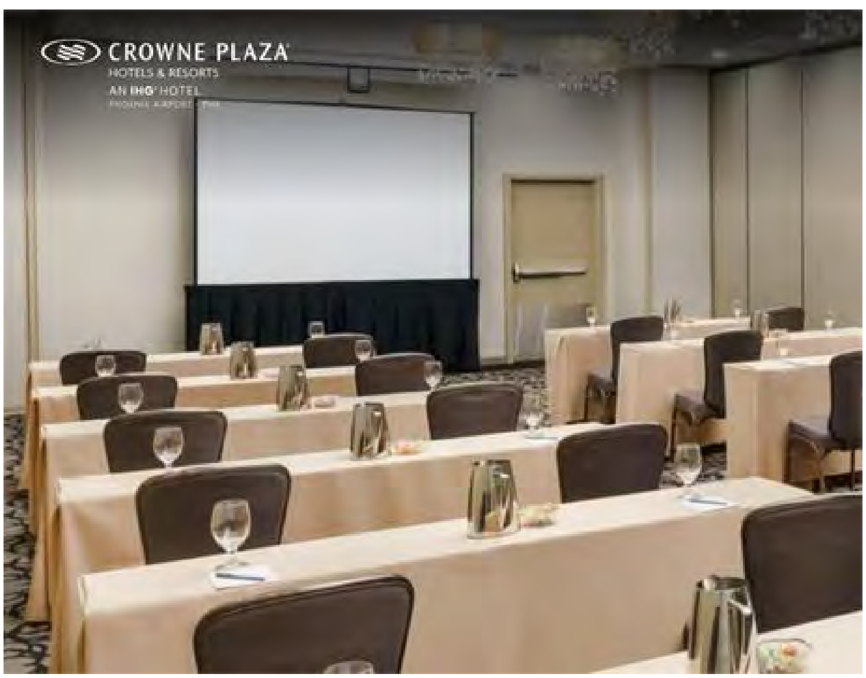
Registration Information

Registration will be open until October 13, 2023 at 11:59 PM. The conference registration fee is $425 per person and must be received by October 20, 2023 to reserve your place at the conference.

The registration fee includes electronic materials, access to the conference APP, breakfasts, lunches, afternoon snack breaks, a group dinner, and the opportunity to expand your knowledge and network with peers.

Registration for this conference will be made via our website. **The "conference registration" should be completed by the primary representative of your organization**. NOTE: After the "conference registration" is complete, then all individuals registered for the conference will receive an individual email with a link for them to select their choices for the "event and meal registration." The "events and meal registration" provides an opportunity for each attendee to provide any dietary restrictions so that APPFA can provide this information to the catering services. After completing each registration, an invoice will be generated with instructions for payment (if applicable).

Primary Representatives: Please use the **conference registration link** to register the staff that will be attending from your organization:
https://appfa.memberclicks.net/november2023-phoenix



Location and Hotel Information

The location of this conference is Phoenix, Arizona. Phoenix is the capital city of Arizona and is in the central region of the state. The conference will be held in the Crowne Plaza Hotel: Phoenix Airport, which is the closest full-service hotel to Sky Harbor International Airport and the only hotel with a stop on the METRO Light Rail system. The METRO Light Rail provides seamless access to downtown Phoenix, Cityscape and Tempe Mill Avenue Entertainment District. The following link, will provide you with the top **Phoenix Attractions**, should you want to explore the host city.

The conference room rate is $151 (2023 Federal Government per diem) plus applicable taxes. If you are planning to arrive early or extend your stay, we have secured the conference rates from November 4 to a departure date of November 9, 2023. Each attendee will be provided with up to two tickets to use on the METRO Light Rail to navigate from the hotel to other area attractions. Attendees will select their quantity of METRO tickets during the conference registration process. *A METRO ticket will not be necessary for your transportation to Rustler's Rooste on Monday evening.*

The group link for making your **hotel reservations** is **APPFA Conference**.

Reservations may also be made by calling the hotel directly at 855-586-8475 and referencing "Association of Public Pension Fund Auditors or code K6T" for the room blook. Please make your registration by Friday, October 13, 2023 to receive the group rate.

The **hotel website** includes information on the hotel amenities and room features, as well as nearby attractions.

Transportation

The Crowne Plaza Hotel: Phoenix Airport provides 24-hour complimentary airport shuttle to Sky Harbor International Airport. If you need a ride from PHX airport, proceed to the Hotel Shuttle Stop and call 855-586-8475 when you are ready for pickup. For those attendees that plan to drive to the conference, the hotel does offer self-parking and secure indoor and outdoor parking with 24-hour surveillance.

About Your Sponsors and Continuing Professional Education

The APPFA Professional Development Conference is a group-live conference designed to further enhance participants' auditing skills and provide a forum for the exchange of ideas and concepts. Attendees should have a basic knowledge of accounting and auditing procedures, practices, and theory. There is no experience requirement, and no advance preparation is needed. APPFA members that currently work in internal audit, compliance, and/or risk management are the individuals that should attend. See Table 1 for more information.

Attendees will receive an attendance certificate via email following the completion of this conference. Auditing and accounting professionals may qualify for Continuing Professional Education (CPE) credits by attending this conference, which is designed to comply with the American Institute of Certified Public Accountants' Statement on CPE Standards.

APPFA is registered with the National Association of State Boards of Accountancy (NASBA), as a sponsor of continuing professional education on the National Registry of CPE Sponsors. State boards of accountancy have final authority on the acceptance of individual courses for CPE credit. Complaints regarding registered sponsors may be addressed to the National Registry of CPE Sponsors through their website: **www.nasbaregistry.org**.

Upon completion of the conference, participants will be able to:

- Recognize how pension leaders have overcome challenges.
- Identify what other pension shops are going through and determine contrasts and similarities and apply that to future audit planning.
- Understand the impact of new and emerging technologies on audit practice and system implementations.
- Apply practical skills learned through case studies from peers.
- Understand emerging issues in the internal audit field.
- Take information they learn from peers in networking sessions to gain a greater understanding of leading practices and take your career to the next level.

Your attendance will enable you to expand your internal audit knowledge and apply what you learn to your current role.

Table 1: CPE-related summary information for this conference as it relates to all sessions.

Criteria	**Description**
Delivery:	Group Live – All sessions include a questions and answer session.
CPE Credits:	18.
Education or Experience Prerequisites (Who Should Attend):	None; public pension fund auditors at all levels are encouraged to attend.
Level of Knowledge:	Overview – Basic.
Advance Prerequisites:	None.
NASBA Fields of Study:	Auditing (governmental), Behavioral Ethics, Information Technology, Specialized Knowledge.

Complaint and/or Refund Policy

Information on how to submit a complaint or request a conference refund is included on the **APPFA website**.

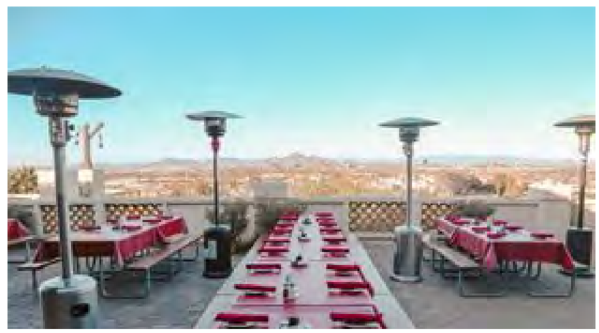
Other Information

Sunday Evening Welcome Reception

We will gather on Sunday evening from 6:00 to 9:00 PM in the hotel for the welcome reception. Please attend the reception to catch up and network with your colleagues.

Monday Group Dinner

Monday night's dinner at the **Rustler's Rooste** is sure to provide excellent food, drinks, and networking. Without a doubt, the view is spectacular and provides a panoramic view of the Valley. This establishment started in 1971 and as legend goes the original site was atop a butte in the foothills of South Mountain as a hideout for cattle rustlers. Today, it is Arizona's Legendary Cowboy Steakhouse.



It is located 15 minutes from downtown Phoenix and Tempe, 20 minutes from Scottsdale, and 10 minutes from the airport. We will arrive at Rustler's Rooste around 6:00 PM with networking for the first 30 minutes and dinner starting around 6:30 to 6:45 PM. The event will conclude at 9:00 PM. Transportation to and from the restaurant will be provided (departure times will be provided closer to the conference). *A METRO ticket will not be necessary to attend this event.* Rustler's Rooste also has live country-western music every night. On Monday, guests can enjoy music from the Marble Heart band from 5:30 to 9:15 PM. Pack your boots and get ready to do some boot scooting' boogie.

Guests
Those of you traveling with friends and family are welcome to bring your guests to any of the social activities planned during the conference. These include:

- Sunday evening reception (no charge)
- Group breakfasts on Monday, Tuesday, and Wednesday ($20 per meal)
- Group lunches on Monday and Tuesday ($20 per meal)
- Group dinner on Monday ($50 per guest)

Attire
Business casual attire for conference attendees is appropriate, and in some instances, that does include jeans and boots, so wear whatever you are comfortable in. The average November temperature in Phoenix ranges from a high of 75 to a low of 51 degrees. We always recommend that you plan to layer so you can adjust your attire as needed for temperatures both inside and out.

"Let's pack up and catch us a slow train
and go back to Phoenix
to a far brighter day."
– Waylon Jennings

National Conference on Public Employee Retirement Systems

Best Governance Practices for Public Retirement Systems

Revised May 2019

Introduction

Increasingly, public employee retirement systems are implementing leading edge governance and risk management practices to position their funds for improved performance, while addressing risks related to the financial markets and global economy.

As the largest trade association for public sector pension funds representing approximately 500 funds that collectively oversee more than $3 trillion in assets, the National Conference on Public Employee Retirement Systems (NCPERS) supports these initiatives.

NCPERS believes that instituting best practices drives accountability, consistency and transparency, which enables improved performance and risk oversight for the benefit of public pension fund members, taxpayers and other stakeholders.

To further these outcomes, NCPERS and Segal Marco Advisors, a leading independent investment solutions firm, have developed Best Governance Practices for Public Retirement Systems.

Background

Governance is on the front burner for corporations, regulators and pension funds alike. In the private sector, lapses evidenced by overexposure to mortgage related securities, excessive leverage and lack of adherence to risk controls led to the collapse of well – known Wall Street investment banks and contributed to a meltdown that at one point eliminated $4 trillion from pensions worldwide.[i]

Among retirement funds, boards and stakeholders are focusing on considerations such as board practices, standards of conduct, risk management and actuarial practices. In the current environment, there are several points for public fund fiduciaries to consider:

- There is a strong link between best practices and performance. Research has found that effective governance may improve long-term investment returns by up to 2.4%, annually[ii]
- Beyond investments, best practices such as board effectiveness assessments, fiduciary training and risk assessments drive performance across strategic oversight, administrative, member service and compliance functions
- The current focus on fund governance is likely to increase in light of policy debates that are increasingly focused, largely without merit, on public employee benefit levels
- Managing reputation risk is an increasingly important challenge for public funds. A fund may reduce the probability and severity of risk events by implementing a risk framework
- Notwithstanding public pension funds' record of implementing best practices, the need for communicating how they work to benefit stakeholders has never been greater.

Pension Fund Governance and Oversight

A pension fund's governance structure is typically comprised of its board, executive management, functional staff and contracted service providers. Within this structure and under the fund's statutory framework, the board sets strategy, approves implementation plans and oversees performance and risk. The board delegates specialized functions such as actuarial studies, asset management, benefits administration and auditing to internal staff and contracted service providers. The fund functions within a framework that is comprised of statutes, rulings, agreements, policies and contracts that regulate system operations. Risk oversight is a key responsibility of the board. In the post financial crisis environment, managing reputation risk is an increasingly important responsibility for public funds.

NCPERS Best Governance Practices

NCPERS encourages fiduciaries who have not done so to consider adopting the following practices with the understanding that flexibility in implementation is one hallmark of effective governance.

I. Governance Manual

Whether it is in electronic or paper form, a fund should adopt a governance manual that serves as a central repository for the fund's primary governance documents. A well-designed governance manual facilitates effective management and provides a tool to educate trustees and stakeholders on fund operations. Key components include:

- Summaries of statutes, regulations, the plan document and board practices
- The systems' mission statement and, if applicable, its vision and guiding principles
- The organization chart, lines of authority, job descriptions and summaries of contracts
- Board policies, key procedures and, if applicable, charters for committees of the board
- References to rulings and agreements that determine benefits and contribution levels

II. Board Practices

A pension fund should establish, document and adhere to a set of practices that have a proven impact on performance and risk oversight. Some of these practices are mandatory (e.g. actuarial valuations), while others may be optional. Recommended practices include:

- Development of a strategic plan or equivalent that guides the fund towards its goals
- Undertaking board evaluations to ensure board governance is optimal and aligned to current best practices
- Adoption of a fiduciary education program to continuously improve fiduciaries' skill sets
- A program of assessments and audits to evaluate internal controls, performance and risk
- Adoption of governance, administration and communication technologies to improve efficiencies and reduce risk
- Actuarial valuations to inform the board of the fund's future financial needs
- Asset allocation studies to identify asset mixes for meeting future financial needs
- A corporate governance approach under which the fund votes its proxies

III. Board Policies

A fund should adopt and adhere to a set of policies designed to guide system operations toward the achievement of stated goals within established risk tolerances. While their form may vary, a board's key policies and procedures should include:

- Standards of conduct, ethics and conflicts of interest rules to codify the duties of fiduciaries
- A communication policy that outlines standards and procedures for trustees and executives
- An investment policy that includes goals, monitoring procedures and board risk tolerances
- Procurement guidelines that document procedures for selecting and monitoring contractors
- A privacy policy that sets forth procedures for protecting members' confidential data
- Whistle blower; discovery of errors and illegal acts; and special investigations policies to protect strong financial oversight
- A risk policy (or equivalent) that defines fund risks along with measures and processes

IV. Risk Oversight

A fund should adopt a risk management framework and document it in a risk policy or within other policy documents (e.g. investment policy, privacy policy). The board should delegate accountability for management of market, credit, operational, asset / liability, liquidity and other risks through job descriptions, contracts and charters. Key components include:

- A governance approach that defines risk categories, accountabilities and reporting
- Risk assessments (e.g. audits) to test controls and potential outcomes of risk events
- Key measures to assess market, operational, credit and asset / liability risk exposures
- Access to information technology to collect and distribute risk data across the fund

A *Model Risk Management Framework* is included in Exhibit A to provide an example of best practices funds employ to manage risk across investment program exposures and functions.

V. Strategic Planning

A fund should adopt a strategic planning approach either in the form of a multi-year plan or within other documents. Strategic planning is a hallmark of successful organizations. It provides the board with a mechanism to map out long-term goals along with the implementation steps necessary to achieve them. Key components include:

- Goals and performance measures for key functions such as benefits administration
- Long-term investment goals, investment risk tolerances and diversification objectives
- Multi-year budgetary needs for fund operating units and for the system
- Service quality goals, measures and tactical plans for achieving them
- Plans for strengthening the fund's compliance program and internal controls
- Succession plans for key executive and board roles

VI. Reporting: Key Performance and Risk Measures

Reports to the board should include a set of key performance and risk measures to help the board assess the fund's progress toward goals across actuarial, administrative, audit, compliance and investment functions. Given their expansive duties, boards rely on efficient reporting to provide effective oversight. Key measures include:

- The funded ratio as measured by the ratio of fund assets to fund liabilities
- Net annualized investment returns relative to the return assumption and benchmarks
- Timeliness and accuracy of distributions paid to members and beneficiaries
- Member satisfaction with fund services as measured by surveys and correspondence
- Future benefits owed to members as measured by the actuarial accrued liability
- Net assets available for benefits and changes thereto as reported in the annual audit

VII. Stakeholder Communications

A fund should communicate regularly with members and other stakeholders through multiple media including web site notifications, publications and letters as well as required reports. Communications provide transparency into fund operations and may increase member satisfaction, while strengthening the fund's reputation. Key components may include:

- A mission statement that describes the fund's purpose to members and the public
- Surveys that measure participant satisfaction, while providing a basis for improvements
- Updates, letters, annual reports on fund operations and forms for member beneficiaries
- Reports on fund performance, board initiatives and external events that impact members
- Governance principles that summarize the fund's structure and statutory framework

Challenges and Opportunities

It is important to note that development of a set of well-written policies is by no means a guarantee of favorable results. In fact, common pitfalls of governance can lead to suboptimal performance for the most well intended organizations. These include:

- Lack of adherence to policies and rules that leads to compliance and/or risk failures
- Excessive bureaucracy (e.g. too many committees) that slows or halts decision making
- Unattainable policies and goals that increase the probability of compliance failures
- Cumbersome documentation that discourages stakeholders from understanding policies
- Overly rigid rules that take discretion from experts who are compensated to exercise it
- Allowing policies to become outdated or irrelevant

Challenges and Opportunities (cont'd)

An organization can avoid these pitfalls by adhering to basic principles, many of which are embodied in NCPERS recommended practices. Enablers of effective governance include:

- Training to equip board and staff to adhere to policies (especially when they are new)
- Clear documentation of authority for decisions in job descriptions, charters and contracts
- Brief summaries of policy documents that are the subject of trustee decisions
- Reasonable flexibility in applying performance targets, risk thresholds and timelines
- Timely and regular reviews of all key policies to ensure that they are valid, up to date, and still relevant to the current operating environment

Conclusion

Public pension funds have played a leadership in delivering high quality, cost-effective benefits to their members through effective oversight, accountability and transparency. However, the need for continuous improvement and for communicating how these practices work to benefit stakeholders has never been greater.

The practices we recommend are intended to provide a means for ongoing improvement and for maximizing long-range organizational performance through market cycles and management changes.

Contributing Author: Julian M. Regan

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i *Pensions & Investments, November 13, 2008*
ii The Ambachtsheer Letter, How Much is Good Governance Worth?, *June 2006*
Modernizing Pension Fund Legal Standards for the Twenty-First Century, *Keith L. Johnson and Frank Jan de Graaf, Rotmam International Journal of Pension Management, Spring 2009*

Exhibit A
Model Risk Management Framework

The _____________________ (the "Fund") employs a risk management framework to enable measurement and management of risk across exposures and investment program functions. While maintaining responsibility for oversight, the Board of Trustees (the "board") delegates implementation to Fund management, the investment consultant, auditor, actuary, custodian, investment managers and counsel who are responsible for managing risk within the scope of their functions.

As summarized below, the framework includes a risk governance approach, assessments, key measures and reporting processes designed to manage categories of risk that are common to defined benefit funds including, but not limited to, market, asset / liability, liquidity, operational and credit risk.* The risk management framework encompasses reputational risk, which may be caused by failures in other risk categories, including but not limited to operational risk events (e.g. compliance failures) that may lead to financial loss.

Risk Governance

Risk governance includes board practices, committee structures, contract provisions, policies and procedures the Fund employs to measure and manage risk. Governance is enabled by the investment policy, which documents roles of fiduciaries, asset allocation structure, risk tolerances and portfolio rebalancing, as well as surveillance of financial controls and risk exposures through audits, assessments and reports prepared by Fund advisors, service providers and investment managers.

Audits and Assessments**

Assessments include, but are not limited to, the annual audit, asset/liability modeling (ALM)***, experience studies, asset allocation modeling, liquidity tier analysis, cash flow projections, stress testing and expense reviews that provide transparency into risk exposures and costs. Assessments also include investment policy and asset allocation reviews, investment manager searches, benchmarking, portfolio reviews, procurements, sensitivity analyses, due diligence exercises and governance reviews.

Key Measures

Key risk measures include, but are not limited to, the funded ratio, changes to the accrued unfunded liability, changes to net assets available for benefits, asset class exposures relative to policy targets and thresholds, diversification across markets, sectors and currencies, down market capture ratio and standard deviation as a measure of volatility. Measures also include Value at Risk (VaR), security issuer concentration, Sharpe ratios, tracking error, average duration, credit ratings, default rates and, where permitted, utilization of leverage and financial instruments that may magnify market risk.

Reporting

The Fund's ability to manage risk is enabled by reports generated by management, the auditor, actuary, investment consultant, custodian and, investment managers. Reports include, but are not limited to, management reports on the Fund's financial positon, actuarial valuations, the custodian's full accrual, multi-currency accounting statements and risk management dashboards. Reports also include the investment consultant's quarterly performance reports and attribution analysis, recurring investment manager reports, the Comprehensive Annual Financial Report (CAFR) and actuarial reports. The Fund and its service providers utilize information technology and external databases to facilitate reporting processes, modeling, benchmarking, peer comparisons and sensitivity analysis.

*Risk categories include market, liquidity, asset/liability, operational and credit risk:

- Market Risk - Market risk is the risk of loss due to adverse movements in market factors such as asset prices, currency rates or interest rates.
- Liquidity Risk – Liquidity risk may be described as the risk of loss due to an asset owner being unable to sell an asset in a timely manner and for its actual value.
- Asset / Liability Risk - Asset / Liability is that the risk that the Fund's liquidity will not be adequate to meet operational requirements or financial obligations, namely liabilities related to benefit payments.
- Operational Risk - Operational risk is the risk of loss resulting from inadequate or failed processes, people and systems of from external events.
- Credit Risk - Credit risk is the risk of loss due to failure of obligors (e.g. bond issuers) to honor their payments.

**Assessments and reports include applicable disclosures under GASB and Actuarial Standards of Practice.

***Asset / Liability Modeling typically includes stress testing under various actuarial and market scenarios.